ADEQUACIES OF CURRICULUM AND TRAINING IN AGRICULTURE PROVIDED AT THREE SAUDI INSTITUTIONS AS ASSESSED BY ADMINISTRATORS, INSTRUCTORS, SENIOR STUDENTS, AND REGIONAL DIRECTORS

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CHAPTER I

INTRODUCTION

Increasingly the Saudi Arabian government is giving more attention to development of the agricultural sector. Establishment and improvement of existing schools of agriculture and other programs of agricultural education are found at the forefront of these endeavors. Other agricultural organizations such as the Ministry of Agriculture and Water and the Agricultural Bank are likewise supported in their effort to use the natural wealth to assure the gradual transition to renewable natural resources, the soil and agricultural productivity. In such a setting those individuals graduating from Colleges of Agriculture and the Agricultural Institute become even more important in terms of the nations's future. This sustained concern of the government was expressed readily through establishing of Colleges of Agriculture at King Saud University in 1965 and College of Agriculture at King Faisal University in the eastern province of the kingdon in 1975 and the Agricultural Institute which was developed in 1977 in Buraydah.

The two major agricultural service organizations, the Ministry of Agriculture and Water and the Agricultural Bank, were subjected to considerable modification and some restructure in order to expand services to the farmers all over the kingdon. One major facet of this reorganization was the establishment of additional agricultural branches. This expansion of services produced a greatly increased demand for

qualified personnel and consequently even more attention was directed toward increasing both the quantity and quality of graduates of the two agricultural colleges and the institutes.

Statement of the Problem

There is considerable evidence that the government of Saudi Arabia has continued to recognize the importance of agriculture development during the more recent period of economic affluence. One facet of this concern was the willingness to fund programs emphasizing agriculture and agricultural education.

Early in the beginning of this more affluent era the government established intermediate schools of agriculture in 1960 and soon thereafter established a College of Agriculture at King Saud University. More recently, when King Faisal University was established, agriculture was given a prominent place. The Ministry of Education also attempted to plan for and implement instruction at the agricultural institute. The Agricultural Institute of Buraydah was developed in response to the need for training at a very practical level. The program of studies at the Agricultural Institute functions at a level equivalent to, or slightly higher than secondary school training. The demand for graduates of the Institute remains high resulting in little if any attempt to encourage matriculation of graduates in the College or the University. Only slight revisions have been attempted in Institute curricula, since its establishment in 1977-78; but the need for further development is clearly acknowledged. On the other hand, the Colleges of Agriculture at King Saud University and the recently established King Faisal University have, since their inception, been attempting continued curriculum development.

Many agricultural students who have graduated from either Colleges or the Institute are presently serving in various capacities in agricultural fields and management in various parts of the kingdom. There is obviously a need to make some assessment of how well graduates of the present curricula are performing on the job.

Perceptions regarding the quality of performance of graduate, and perceptions of faculty and fellow students as to selected aspects of the current program are definitely needed. Therefore, perceptions of and judgments with regard to curricula and student adequacy should come from both the people who administer and supervise the work of graduates; but also teachers and administrators involved in the teaching program as well as students who have almost completed their academic work. These perceptions and judgments will help in further development and/or revision of curricula, both for the Colleges of Agriculture and the Agricultural Institute.

Purpose of the Study

The main purpose of this study was to assess the degree of adequacy of curriculum and training in agriculture now being offered at the Colleges of Agriculture at King Faisal University, and King Saud University, and the Agricultural Institute in Buraydah. In particular, such assessment was directed toward the extent to which these institutions are successful in developing the skills and knowledge in their graduates needed to serve effectively in the agriculture and agricultural education sectors of the kingdom economy. A concomitant purpose was to undergird further development and revision of curricula to enhance more rapid development of the agricultural sector in Saudi

Arabia; and to assist agricultural specialists at various levels in becoming qualified to carry out their responsibilities.

Objectives of the Study

The specific objectives of the study were:

1. To determine the adequacies of agricultural curriculum and training of the colleges of College of Agriculture at King Faisal University and King Saud University, and the Agricultural Institute in Buraydah in Saudi Arabia as perceived by:
   a. Administrators at Colleges of Agriculture and the Agricultural Institute
   b. Instructors at the Colleges and the Institute
   c. Senior students enrolled at these institutions
   d. Directors who supervise on-the-job performance of the graduates, their employees
2. To determine the extent of possible agreement among the four groups regarding the effectiveness of curriculum and training programs.
3. To recommend additions or revisions which may make the curriculum and training program more effective in meeting the needs for preparing agricultural specialists based upon findings in the literature review and analyses of the data.

Assumptions

The data validity was subjected to the following assumptions:

1. The instrument was reflective of the nature and extent of the agricultural curriculum being offered at the three Saudi Agricultural institutions studied.
2. The instrument was clear enough to adequately communicate information being sought from all groups involved in this study.
3. Respondents were willing and able to answer the questionnaire.

4. It is assumed that all respondents will had enough knowledge to provide the needed data for making assessments concerning the adequacies of curriculum and training.

5. It was further assumed that the respondents were representative of their respective groups.

Scope and Limitations

This study was limited to:

1. Directors who are the employers of graduates, both regional branches of the Ministry of Agriculture and Water and the main branches of the Agricultural Bank. It should be recognized that these directors know little about the respective curricula, except as they assess performance of graduates they employ.

2. The student respondents were limited to those who had completed the major portion of academic work including the internship (summer field training) at the three institutions.

3. Curricula, except for that portion designated general studies were limited to what directly related to agriculture.

4. Both at the College and the Institute, respondents were limited to individuals either in a position of administration or teaching.

5. Responses were limited to those secured from individuals present at their respective offices or classrooms on the day the interviewer administered the questionnaires.

Definition of Terms

The College of Agriculture at King Saud University -(formerly University of Riyadh) was established in 1965 and located in Riyadh to teach agricultural courses and offer B.S. in different areas of agriculture. The B.S. degree is awarded after at least four years of work in an academic program in agriculture. Those students who are enrolled must complete a high school level (science division) before they become accepted.

The College of Agriculture at King Faisal University - was established in Al-Hafuf in the Eastern Province of Saudi Arabia in 1975 to offer agricultural courses for those students who completed a high school level (science division). It offers a B.S. program in several agricultural areas. The B.S. degree is conferred after the student completes all requirements, normally taking at least four years.

The Agricultural Institute in Buraydah - was established in 1977 to teach agriculture courses to students who have completed an elementary level education. The Institute offers a three year program in agriculture.

Administrators - refers to those persions in positions such as Deans, Deputies to the Dean, Department Heads and/or Director of Schools in each of the three institutions preparing agricultural workers.

Regional Directors - refers to those persons, apart from higher education, holding administrative or directive positions in either the Ministry of Agriculture and Water Regional Branches or the Agricultural Bank, Main Branches. They serve as employers of most of the graduates in agriculture.

Instructors or Teachers - in this study include those currently serving as instructors and in a teaching position in agriculture at one of the three institutions included in this study.

Senior Students - in this study refers to students who were near completion of requirements including internship for an academic degree at their respective institute or college of agriculture.

Main Branches of the Agricultural Bank - refers to branches which had been established by the Central Agricultural Bank to serve farmers.

all over the kingdom and direct the banking services in the respective areas.

Regional Branch - refers to the several branches established by the Ministry of Agriculture and Water to direct the agricultural units and assist in making more effective services available for farmers.

Adequacy - as used in this study refers to how well the worker will perform or is now performing. This expresses the degree of proficiency possessed by the student upon comletion of training at the respective institutions.

Curriculum - as used in this study refers to the courses generally included in the individual student's plan of study, but also includes selected other learning experiences more or less common to graduates of the institutions studied.

Training - as used in this study refers to the program of studies and other learning experiences generally provided for people entering the work force as an agent of the Ministry of Agriculture and Water or as a local director or supervisor of the Agricultural Bank.

CHAPTER II

REVIEW OF LITERATURE

Introduction

As mentioned previously, the agricultural sector was given a high priority by the Government of Saudi Arabia and those engaged in agricultural planning, production, and education. This will be more helpful since most of the people in Saudi Arabia now recognize the importance of agriculture in the near future. Government support will be helpful in the development of Saudi agriculture.

Overview of the Origin and Present Status of Higher Education Curricula in Agriculture in Saudi Arabia

Since the Ministry of Agriculture and Water established the agricultural elementary school programs in 1955, Agricultural Education has definitely enjoyed more support, emphasis and prestige. Establishing these schools at the elementary level was followed by establishment of the Colleges of Agriculture at King Saud University and King Faisal University. Soon after agricultural programs began at the College level, the Agricultural Institute in Buraydah was instituted by the Ministry of Education. This work was started in 1977.

Curriculum design and development continues to receive considerable attention. As mentioned previously King Faisal University, established

in 1975, has established certain requirements specifically related to curricula in Agriculture. According to the 1978-1979 catalog of the University (18, p. 29): "The College core requirement is approximately one half of the four year curriculum and designed to form a broad base upon which specialization is built."

Courses are included with the purpose of developing needed skills in mathematics and a working knowledge of the basic sciences. In addition, certain introductory courses are offered in the major field of Agricultural Sciences and food technology. After having completed work largely comprising a base cre requirement, approximately a year of study, the students choose a major field of study or specialization from among the nine offered within the college. Designated for major specialized study are: (1) Agricultural economics and extension; (2) Agricultural engineering; (3) Aquatic wealth development; (4) Crop and forage production; (5) Food and dairy technology; (6) Horticulture; (7) Plant protection; (8) Poultry and animal production, and (9) Soil and water. During the final two years of study, students concentrate mostly on their major field by taking related, compulsory and restriced elective courses.

With regard to the Agricultural Institute in Buraydah, the general objectives of agricultural education were stated in the Agricultural Institute Bulletin (4) as follows:

1. To assist agricultural students' personal development
2. To assist students in preparation for technical in agricultural fields through effective teaching and training
3. To assist in developing rural communities (rural society)

4. To foster further improvement of agricultural production

According to the same mimeographed Bulletin (6), the stated functions indicate that the Agricultural Institute concentrates upon teaching the following major areas: (1) Plant production; (2) Animal production, and (3) Agricultural economics and farm management. All students, regardless of the major chosen, must complete required subjects including applied science, religious, cultural and general agricultural courses the first year. The minimum length of time required is three years.

According to Al-Obaid (3, p. 67, 70) as stated in a thesis completed in technical education, "The Agricultural Education curriculum at the Agricultural Institute seems to be more general (comprehensive). There is no emphasis upon one particular speciality."

He further mentioned that, "It is noteworthy though that animal production and agronomy have the greatest amount of curriculum content." (p. 70)

Further, Al-Obaid (3) recommended that all educational levels and agencies be reformed. Educational programs at all levels throughout the kingdom should be "remolded" to meet present and the future needs of the country in its development.

Viewing education in Saudi Arabia, Nyrop (23, p. 112) affirms that:

> Curriculum at all levels is devoted to improvement of verbal first and to writing ability second. Other skills emphasized, on a descending scale include manipulation and participation. Motor skills and kinaesthetic skills are woefully underemphasized. All subjects are considered separate. We saw (observed) interdisciplinary learning (among) students (who were) are not encouraged or even able to exercise creativity within the motor-sensory skills or literacy skills. Imagination seems to be valued lightly. As a result teaching and learning in the average classroom tends to be stale, automatic, and fully prescribed.

It would appear that Nyrop makes little distinction between the various levels of education in this judgment. If such an indictment applies equally to higher education, then a thorough study of curriculum design and development in agriculture and agricultural education in Saudi Arabia should prove challenging.

With regard to the College of Agriculture at King Saud University as depicted in King Saud University Bulletin (19), it is established that the College of Agriculture has seven departments: (1) Department of Animal Production; (2) Department of Plant Protection; (3) Department of Agricultural Engineering; (4) Department of Plant Production; (5) Department of Food Processing; (6) Department of Soil Science and (7) Department of Agricultural Economics and Rural Sociology.

The College of Agriculture offers the Bachelor of Science degree as a generalist in agriculture or students can choose one of four combinations to become specialized in: (1) Plant products and plant protection; (2) Soil Conservation and Agricultural Engineering; (3) Agricultural Economy and Rural Sociology; (4) Animal Production and Agricultural Industry.

In addition to that, students must complete the university requirements in both elective and required courses as well as the basic and general courses and applied science courses before choosing their major.

According to King Saud University Bulletin (19, p. 45):

> It is the general consensus of the University that the credit-hours system, which allows the student a certain number of elective courses outside the core-curriculum of his major subject, bring about the closer faculty-student relationship, avoids needless repetition of course work and enhances immeasurably the University's task of prepare students to meet the challenges of the Modern World.

The goals of the university as mentioned in the King Faisal University catalog (18, p. 9) are:

> (1) Teaching; (2) Research; (3) Community services, specifically (the goals are) (a) to instruct students in the Islamic philosophy, culture and religion as defined in the Holy Qu'ran, the Sunnah, and the Hadity. (b) To prepare students for professional careers, which will contribute to the development of the kingdom of Saudi Arabia. (c) To encourage students to seek knowledge through study and research.
>
> The various curriculum of the Colleges under continuous review by college and university authorities, are designed to reflect the above goals.

One of the main purposes for establishing the College of Agriculture at King Saud University is to help in developing the agricultural sector and provide training for students preparing for agricultural careers after graduation.

According to King Saud University Bulletin (19, p. 54):

> In recognition of the need for Agricultural Development to be established on the strongest and most modern foundations of Agricultural Education and scientific research, the College of Agriculture was founded in 1965 (1385) and has since provided many Saudi agricultural experts and researchers.

Definitions and General Comments

Regarding Curricula

Curriculum and more specifically curriculum development has been defined by recognized authorities and leading educators in a number of ways. Combs (8, p. 113) mentioned that:

> A curriculum, primarily concerned with content, lends itself to a neat hierarchial organization in which materials can be presented step by step in sequential order.

The term curriculum was defined by Johnson (17) as planning learning experiences that students have under supervision of their school.

Taba (27) defines curriculum as a certain statement of aims, objectives which indicate some selection and organization of contents. As such this can be recognized as manifesting a pattern of learning which might be imposed because of the objectives demanding it, or because the content organization requires them.

Curriculum, according to Umstated (30) consists of designated activities for an individual or group within like abilities or interests.

Curriculum needs to be carefully planned and involves experiences and expertise. Kelly (20, p. 7) agrees with the definitions, "As all learning which is planned and guided by the school whether it is carried on in groups or individually, inside or outside the school."

On the other hand we see curriculum is given a more specific and clear definition when Cay (7) descirbed it as an umbrella which covers school; it is an educational design of learning experiences for different levels of age children, youths, and adults in school. It is a people's values, beliefs, philosophies, and their practice regarding education.

As Doll (11, p. 4) indicated, curriculum is, "(1) Guided, (2) plans for learning, (3) end or outcomes of being educated and (4) system for achieving educational production."

Doll added that it was commonly used during the thirties and forties as a curriculum of a school as all the experiences that people have under the guidance of their school.

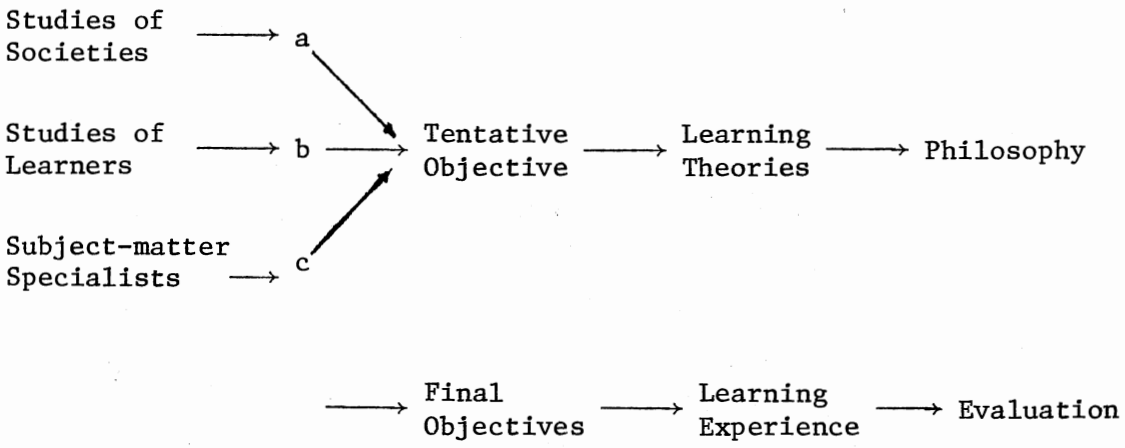
A Brief Review of Selected Positions Regarding Curriculum Development

Tyler (29, p. 1) mentioned when developing curriculum there were certain questions that should be considered:

1. What should be the educational objectives of curriculum?
2. What learning experience should be developed to enable students to achieve the objectives?
3. How should learning experiences be organized to increase their cumulative effects?
4. How should the effectiveness of the curriculum be evaluated?

To develop curriculum for underdeveloped countries, it requires time, thinking, and more efforts to achieve all or most of the objectives and goals based upon certain philosophy and theories which are related to the societies, learners, and subject matter.

Tyler's conceptual framework for curriculum development was graphically reconstructed by Emans (12, p. 329) and is shown in Figure 1. It should be noted that Emans represents Tyler as proposing that "educational objectives originated from the following sources: (a) studies of societies; (b) studies of learners; and (c) subject-matter specialists".

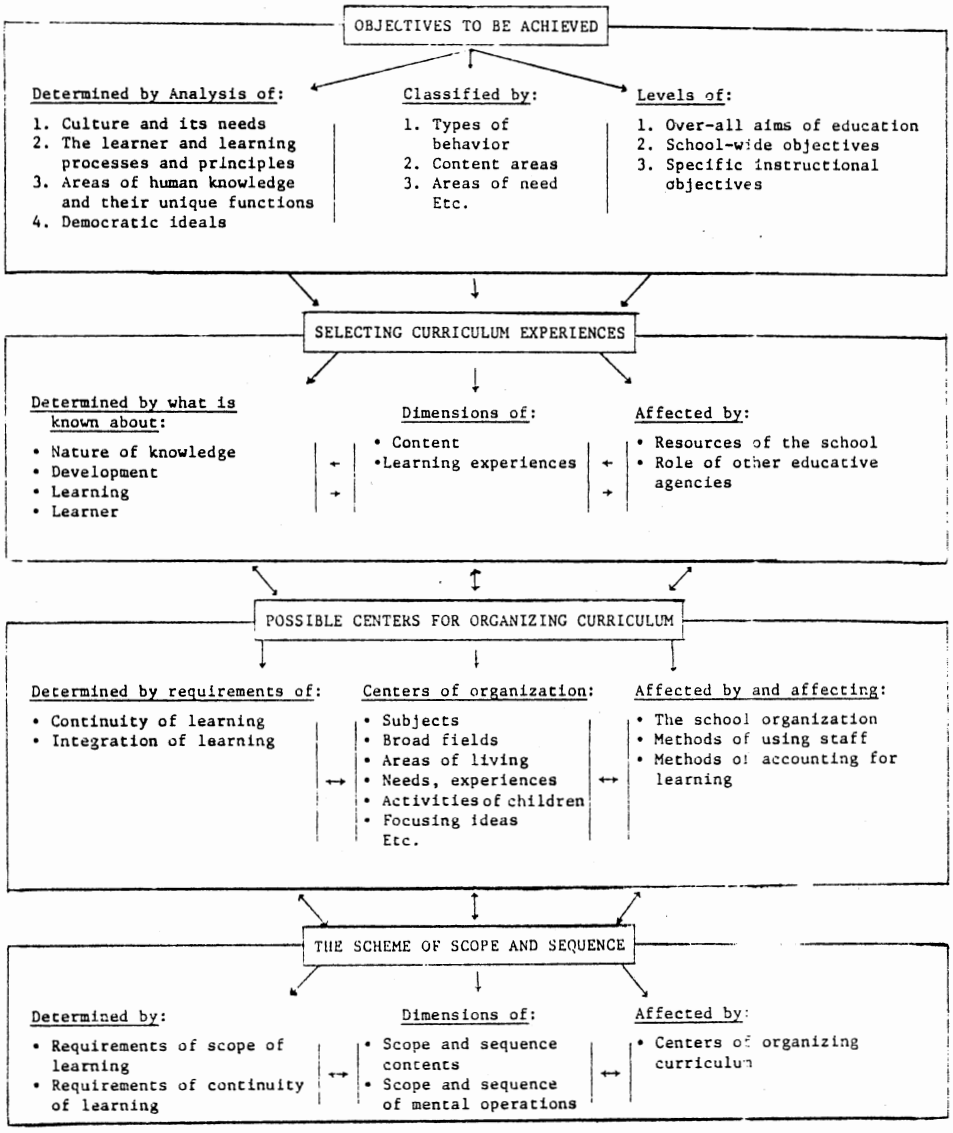


Source: Reproduced from the Journal of Educational Research, Vol. 59, No. 7 by Emans (12, p. 328)

Figure 1. A Graphic Presentation of Tyler's Proposed Conceptual Framework for Curriculum Development

A conceptual framework such as that proposed by Tyler can be readily expanded according to the objectives and goals. Taba's proposal of a model for curriculum design expands Tyler's framework and conforms more to the meaning of curriculum design. Taba (27) emphasizes the following: (a) the chief points at which curriculum decisions are made; (b) the considerations that apply to each; (c) the relationship that exists among such decisions and considerations, and (d) the criteria which subsequently evolve and are finally established. Such emphasis related to process are graphically shown in Figure 2.

Curriculum has implications which can be valuable and useful for certain goals and objectives and for certain societies and learners; however, not all curriculum implications will be effective for all countries. Technological differences between developed and underdeveloped countries obviously indicate differences in goals and



Source: Reproduced from Curriculum Development by Taba (27, p. 438).

Figure 2. A Graphic Presentation of Taba's Model for Curriculum Design

objectives, but Tyler (28) mentioned the significant implications for curriculum development which can improve the total educational system and can be founded in two facts:

1. Reducing the time which is given to education by parent, community agencies and work setting compared to the school constant time.

2. Importance of experiences which take place outside the school where the young people spend most of their time.

Tyler (28) stated that the implication for achieving transfer of training when he fails to transfer what he learned in school to situations outside the school is a problem which deals with active role of learner and one has long been central to educational psychology; because school has established students must achieve behavior that will be acceptable and important for constructive out-of-school activities.

Manniner (21, p. 46) illustrates that, "Curriculum design is the superstructure of curriculum organization. It is a structure that is developed with great sensitivity to internal and environmental needs.:

Manning (21, p. 18) added that, "The design of curriculum by many teachers as a remote consideration which does not relate itself in any important way to the teachers' work."

Curriculum design for developing countries needs to be more heavily dependent upon a design which considers day by day concerns and experiences and should be geared to social change affecting situations which exist within the society, either for individuals or groups.

Johnson (16, p. 20) stated that, "in developing curriculum, one should consider the need of the students, contemporary life outside the school, and the subject matter specialists."

According to Amatayakul (1, p. 6), curriculum should:

1. Start with everyday concerns and experiences of learners.

2. Deal with those aspects of the persistent personal life situation regarding the individual maturity and background.

3. Help the learner deal with different situations, which are a part of the present situation and more related to their needs.

4. Help to provide opportunities for any individual to participate and share in the selection and development of his experiences.

Chen (6, p. 7) stated:

> ...therefore the agricultural curriculum should keep up with the need of the local agricultural situation, the change of seasonal alternative and the demands of services of the agricultural school.

Brooks (5, p. 7) seems to be in agreement with others when he pointed out that:

> ...what is needed are curricula designated not as collections of independent bits of knowledge, not as isolated one static subjects learned in a vacuum. Instead, our curricula must reflect the complex relationships and processes inherent in the many problems facing our society. Knowledge, understanding, skills, attitudes, appreciations, interests and processes should be studied as integrated units in curricular design which reflect the rapidly changing aspects of our Society.

Curriculum should begin step-by-step to meet the learners needs because curriculum design is the cornerstone which will be the base for any curriculum development or curriculum revision.

Gwynn (13) illustrated five stages of curriculum growth of the modern school in the last four decades and defined the steps in a form of the five movements: (1) the aims and objectives; (2) the survey movement; (3) the development of the unit technique; (4) system-wide curriculum revision, and (5) the core curriculum and large unit procedures, including the fusion movement.

Norton and Norton (22, p. 3) stated that, "...through curriculum revision they are redefining the purposes of education, improving the means for achieving these purposes, and keeping teachers abreast of the time."

Curriculum revision should be planned and involve all agencies or people who use or apply such revisions, then reviewed before implementing the suggested changes or revisions.

According to suggestions by Dorttrens (9, p. 12) concerning curriculum revisions, he suggests that:

1. A critical study should be made of reasons leading to a decision to modify the program and of general direction to modify the program and of general direction in which the work should be fixed.

2. For all school levels survey should be conducted.

3. Using questionnaires as means by submitting them to teachers, inspectors and other agencies who have a connection with school.

4. Universities and psychological institutes should be considered as a part which can be asked to give their opinions and advices.

5. This project should be made or operated by teachers and school administrators.

6. This program should be done at schools which truly represent the region or area schools with continuation of control and recording facts and criticisms.

7. Any revision ought to be made should be submitted with a complete program to the authorities.

8. Modification and the new program should be explained to the teachers, professional and the new program should be applied.

9. Other community people and families should be informed by the new revision.

10. Publishing and produce all materials and textbooks needed by the new program.

11. Continuing evaluation and observation should be done by establishing organizations which will take care of this step.

A Brief Review of Selected Available Completed Studies and Research Related to Curriculum Development in Higher Education in Agriculture

While there were no studies found specifically directed toward curriculum design and/or development for Higher Education in Agriculture in Saudi Arabia, a limited number of studies in closely related areas were available. Other studies with regard to curricula in Higher Education in selected developing nations, also would seem to provide some background helpful for designing and implementing this study.

Regarding developing countries, it has been mentioned by UNESCO (2, p. 36) that:

> A common feature of the existing curricula of agriculture in the first degree or undergraduate program at the third level is the presence of introductory courses in Agriculture, notably those dealing with general principles usually given in the earlier year. Concurrently offered are basic sciences such as chemistry, physics, biology, physiology, etc. to acquaint the students with the fundamentals of those sciences which directly or indirectly affect agriculture.

It was also mentioned (2) that the most basic general course in education in most of the Asian countries at the same college of agriculture are taken by students at the other colleges at the same university.

There are many problems with curriculum of agricultural education in developing countries of Asia. Administrative problems and some of them which are implementational problems were noted and mentioned by UNESCO (2).

One of these problems was the lack of long-range program planning in relation to economic development. Also a problem is lack of coordination between the agricultural training institution and the potential employers of agricultural graduates, especially in the developing curriculum.

With regard to the responsibilities of the university to develop and participate in preparing its graduates to accept the challenge and face daily change toward effective productivity, Rigney and Commings (25, p. 63) indicated that:

> If the universities are to play a greater role in rural development, they must be associated with the planners so that they may have full access to, and indeed, advise on programs to be included in the plan. In order to be in position to do this, agricultural universities must first establish that they have the competence and ability to advise on national development activities. Universities have to demonstrate that they are more in close touch with the needs and aspirations of the rural community.

Rigney and Commings (25, p. 63) stated that, "Agricultural education is action-oriented and it is necessary to turn out the type of graduate that is needed by the nation."

Because, in a developing country such as Saudi Arabia, it is inevitable that a host of problems arise, change must be dealt with speedily. For the educational sector this calls for rapidity of curriculum revision in order to respond to future development needs. Revision often constituting reform of curriculum is very necessary. This is stated by UNESCO (2, p. 57) in this manner:

> The problem arising from curricular reforms have been noted by several countries and range from revision methods to the question of what additional courses should be included in new extended curricula to meet changing requirements. Some doubts have been expressed as to the capability of existing curricula, especially at the high school level, to attain the objectives set.

The stability or decreasing of agricultural production in developing countries is caused by different factors such as financing, manpower, lands, cooperation and agricultural curriculum is one of these factors, according to Price and Casey (24, p. 64):

> Some weaknesses in the agricultural institution in developing nations which can help in promoting agricultural production are:
>
> 1. Low level or no involvement of the agricultural institute and college in helping to develop and participate in developing agricultural production.
>
> 2. Experiment stations which belong to colleges or agricultural institute have little impact and participation in developing agricultural sector in those nations.
>
> 3. Faculty in agriculture might be lack of agricultural skills and/or field experiences.
>
> 4. Students mostly come from urban or from rural area from subsistance farms and do not have experience in field management or any other fields.
>
> 5. Curriculum and agricultural education formal or informal should not be shackled by strict adherence to the traditional approach often based upon western curriculum and learning patterns. More innovation and locally approaches should be allowed.

Placement and Follow-Up of Graduates as Related to Curriculum Development and/or Education

Basic to curriculum development and more especially to curriculum revision is a careful look at placement of graduates and follow-up of their performance. In an article appearing in the Agricultural Education Magazine, Sharp and Rebecca (26, p. 1) made the statement, "...the employment of the graduates in a job for which he is reciving training is the accepted ultimate indicator of successful vocational training..."

The authors (26, p. 1) also comment about follow-up studies in a similar manner:

> Follow-up studies involve research design which require contact with individuals who have shared an experience in the past and whom the researcher desires to study or restudy. The usual goals of such studies are to arrive at some measure of impact of the experience on the subsequent behavior or status of these individuals.

Drake (10) contends that the "follow-up study" constitutes one of the more important techniques for assessing the outcomes of agri-business education program and offers an excellent vehicle for achieving program improvement.

Hogges (14, p. 15) in quoting from "A Guide for the Development of Curriculum in Vocational Education and Technical Education", succinctly points out that, "Follow up programs on the results obtained from training can be used to provide feedback to curriculum producers..."

Hemp (15) writing in 1971 issue of the Agricultural Education Magazine asserts while a follow-up study that has many aspects, one of the most important is that of discovering what happens to graduates of high schools and post secondary programs. He distinctly points out that such studies should greatly aid conscientious teachers to evaluate their teaching. Likewise, they may become more critical of the curriculum they are using.

In a like manner, Warmbord (31, pp. 299-300) cautions about the often time narrow usage of follow-up studies, "...the fact that follow-up studies concerned primarily with rates of employment de-emphasize other appropriate objectives of vocational education."

With regard to possible evaluation of graduates of the Agricultural Institute in Buraydah, it would seem pertinent to the Agricultural Institute Bulletin (4) describing the program of studies provided by

the Institute. It is stated that a vast majority of the students who graduate from the Agricultural Institute served in one of the following positions:

1. Served in extension and/or agricultural education programs.
2. Fill agricultural jobs as technicians in a governmental agricultural organization.
3. Serve as coordinators, supervisors or managers of agricultural projects and/or farms.

Linkages between the anticipated placement of the graduates, curriculum so developed, and the actual performance of these graduates from agricultural institutions appear to be important. Such continued linkages and study would seem mandatory for achieving a higher level of job effectiveness and increasing production.

According to UNESCO (2, p. 51):

> The placement of graduates is often a measure of the success of agricultural institutions. This would be reasonable if the institutions at least define or specified how many or what proportion of its graduates should be employed in the different agricultural occupations.

Summary

In this chapter, an attempt was made to collect pertinent selected axioms promulgated by and opinions held by reputable authorities regarding curriculum development, definition of curriculum, and application of models developed by Tyler and Taba. Other researchers reviews were included illustrative of follow-up studies which provided directions in attempting possible change and/or development of curricula.

Included is a presentation of the programs being offered at the Colleges of Agriculture at King Saud University and King Faisal

University and the Agricultural Institute in Buraydah, including objectives of each school. Further, it was deemed a strength to the theoretical framework to include selected comments by writers and authors such as Nyrop (23) regarding certain aspects of curriculum situation in Saudi Arabia.

CHAPTER III

METHODOLOGY

Introduction

Chapter III deals with the population for the study, development of the questionnaires and instrument, handling and administering of the questionnaires and treatment of data.

Population for the Study and Administration of Questionnaires

The study population included the total of agricultural administrators and instructors presently serving at:

1. Colleges of Agriculture, King Saud University and King Faisal University.
2. Directors of the 15 regional branches of the Ministry of Agriculture and Water and the 12 Agricultural Bank Branches spread all over the kingdom.
3. The Agricultural Institute of Buraydah.

For the College of Agriculture at King Faisal University, the included population was:

Administrators	100 percent
Instructors	100 percent
Senior Students	100 percent

For the College of Agriculture at King Saud University, the included population was:

Administrators	100 percent
Instructors	50 percent
Senior Students	50 percent

For the Agricultural Institute, the included population was:

Administrators	100 percent
Instructors	100 percent
Senior Students	50 percent

Because of the much greater number of instructors and senior students at King Saud University and senior students at the Agricultural Institute in Buraydah, it was felt that sample of 50 percent of these groups would be sufficient to meet the requirement of the study.

Both the Ministry of Agriculture and Water Regional Branches and the Agricultural Bank Main Branches, the included population was 100 percent. Table I shows the estimated and/or actual population and the sample percentages and the total respondents attempted.

Sampling

Responses from administrators, consisting of Deans and Department Heads of the Colleges of Agriculture, and/or Institute were secured through personal interview of all respondents at each institution.

Responses from general directors and/or supervisors of workers in local units were secured from each Director in the Regional Branch offices of both the 15 Ministry of Agriculture and Water Regional Branches and the 12 Agricultural Bank Main Branches. All responses were secured through personal interview.

Students samplings of 50 percent from two institutions, the College of Agriculture at King Saud University and the Agricultural Institute in Buraydah, were drawn randomly from an alphabetic list of students. All students studying agriculture at King Faisal University were included. All students selected were asked to respond to the questionnaire during

TABLE I

ORIGINAL POPULATION PARAMETERS, SAMPLE SIZE AND STRATIFICATION

Institution and/or Branch of Government	Institutional Group	Actual or Estimated Population	Sample Percentage	Total Respondents Expected
(1) College of Agriculture King Saud University	Administrators*	9	100%	9
	Instructors	80	50%	40
	Senior Students	100	50%	50
(2) College of Agriculture King Faisal University	Administrators	12	100%	12
	Instructors	30	100%	30
	Senior Students	40	100%	40
(3) The Agricultural Institute at Burydah	Administrators	3	100%	3
	Instructors	23	100%	23
	Senior Students	110	50%	55
(4) The Ministry of Agricultural & Water Regional Branches	Directors	18	100%	18
(5) The Agricultural Bank Main Branches	Directors	12	100%	12
TOTAL		437		292

*Deans, Deputies and Department Heads.

TABLE II

SUMMARY OF PROJECTED POPULATION INCLUDED IN THIS STUDY

Group	Number (actual or estimated)
(1) Administrators	24
(2) Instructors	93
(3) Senior Students	145
(4) Directors	30
TOTAL	292

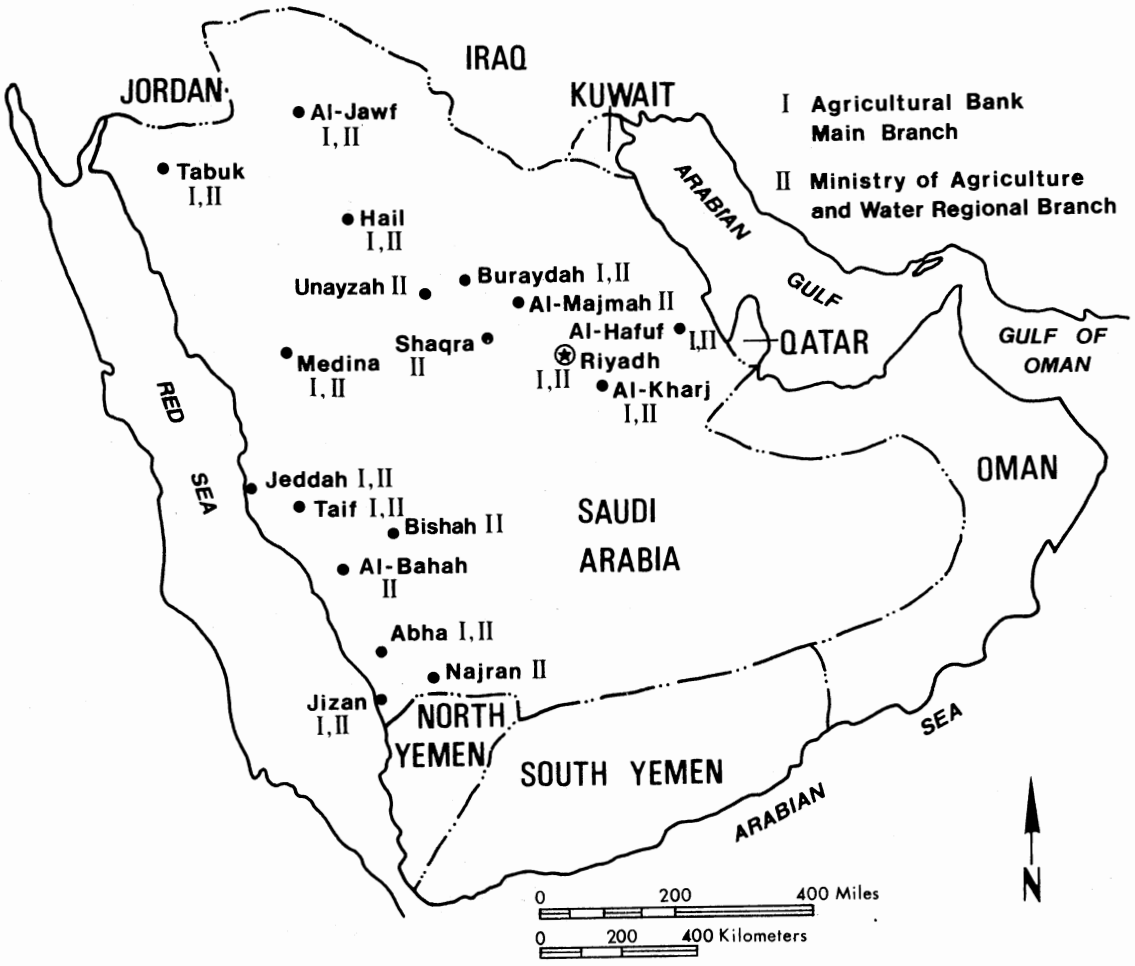


Figure 3. A Map Showing Locations of the Ministry of Agriculture and Water Regional Branches and the Agricultural Bank Main Branches in Saudi Arabia

group interview sessions held at the College or Institute with the cooperation and assistance of the students' advisors.

The instructors sampling of 50 percent from College of Agriculture at King Saud University was likewise drawn randomly from a listing of agricultural faculty in the respective college. Personal interviews were conducted by the researcher both individually or in groups. The size of groups rarely exceeded seven persons.

Development of Instrument to Obtain Data

Questionnaires and/or interview forms were developed by the researchers in consultation with faculty of Department of Agricultural Education and other faculty in relevant fields.

The instrument was pretested to insure a high degree of communication between the researcher and the respondents. Pretesting was largely accomplished by submitting a draft of the instrument to ten former instructors and/or administrators from Saudi Arabia and nearby Arabian countries who were studying at Oklahoma State University. A portion of the questionnaire was so constructed that response could be secured by means of a Likert type scale. The questionnaires were first constructed in English and then translated into Arabic for submission to respondents.

Responses received from directors at both the Ministry of Agriculture and Water Regional Branches and the Agricultural Bank Main Branches were stratified according to educational level of the persons evaluated. Three subgroups were structured as follows:

1. Inclusion of people who have a B.S. and/or M.S. in Agriculture.

2. Inclusion of people who have diplomas from Agricultural Institute.

3. Inclusion of people who have the elementary Agricultural School diploma only.

Data Treatment

Data were secured and collated. Mean scores were determined for each item and were given weight according to the group means established by absolute limits as shown in Figures 4, 5, 6, and 7.

Comparisons were made and conclusions drawn largely from the yields of data completed through establishment of group mean scores.

	Numbers Offered for Responses	Absolute Limits
Extremely Important	5	4.5 - 5.0
Very Important	4	3.5 - 4.49
Important	3	2.5 - 3.49
Slightly Important	2	1.5 - 2.49
Low or No Importance	1	1 - 1.49

Figure 4. Absolute Limits for Use in Establishing Group Mean Scores for Questionnaire Part II-A

	Numbers Offered for Responses	Absolute Limits
Adequate	5	4.5 - 5.0
	4	3.5 - 4.49
	3	2.5 - 3.49
	2	1.5 - 2.49
Inadequate	1	1 - 1.49

Figure 5. Absolute Limits for Use in Establishing Group Mean Scores for Questionnaire Part II-B

	Numbers Offered for Responses	Absolute Limits
Very Important	5	4.5 - 5.0
Important	4	3.5 - 4.49
Undecided	3	2.5 - 3.49
Little Importance	2	1.5 - 2.49
Of No Importance	1	1 - 1.49

Figure 6. Absolute Limits for Use in Establishing Group Mean Scores for Questionnaire Part III

	Numbers Offered for Responses	Absolute Limits
Strongly Agree	5	4.5 - 5.0
Agree	4	3.5 - 4.49
Undecided	3	2.5 - 3.49
Disagree	2	1.5 - 2.49
Strongly Disagree	1	1 - 1.49

Figure 7. Absolute Limits for Use in Establishing Group Mean Scores for Questionnaires Part IV and V

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

Introduction

In this chapter an attempt is made to present data secured through responses from individual and group interview conducted by the researcher.

The purpose of the study is repeated here in order that the reader may be cognizant of the reason or purpose behind the gathering and collation of data. The main purpose of this study was to assess the degree of adequacy of curriculum and training in agriculture at King Saud University, King Faisal University, and the Agricultural Institute in Buraydah, Saudi Arabia. A concommitant purpose was to undergird further development and revision of agricultural curricula to enhance more rapid development of the agricultural sector in Saudi Arabia.

The objectives of the study as found on page four were:

1. To determine the adequacies of agricultural curriculum and training of the colleges of College of Agriculture at King Faisal University and King Saud University and the Agricultural Institute in Buraydah in Saudi Arabia as perceived by:

    a. Administrators at Collegs of Agriculture and the Agricultural Institute.

    b. Instructors at the Colleges and the Institute.

c. Senior students enrolled at these institutions.

d. Directors who supervise on-the-job performance of the graduates, their employees.

2. To determine the extent of possible agreement among the four groups regarding the effectiveness of curriculum and training programs.

3. To recommend additions or revisions which may make the curriculum and training program more effective in meeting the needs for preparing agricultural specialists based upon findings in the literature review and analyses of the data.

Population for the Study

The population from which data were secured consisted of the agricultural colleges at (1) King Saud University, (2) King Faisal University, (3) the Agricultural Institute in Buraydah, and (4) Directors of the regional branches of Ministry of Agriculture and Water and the main branches of the Agricultural Bank in Saudi Arabia where institutions represented by the following group either randomly selected or to the entire population of the group as follows:

1. Administrators at the Colleges of Agricultural Colleges and the Agricultural Institute (100 percent).

2. Directors of the regional and main branches of the Ministry of Agriculture and Water and the Agricultural Bank (100 percent).

3. Instructors and senior students at the College of Agriculture at King Saud University, randomly chosen (50 percent).

4. Instructors and senior students at the College of Agriculture at King Faisal University (100 percent).

5. Senior students at the Agricultural Institute when randomly chosen (50 percent) and instructors (100 percent).

Table III shows the groups who were involved in the study and also shows sampling percentage and the percentage of return.

TABLE III

ACTUAL POPULATION AND SAMPLE SIZE AND FINAL RETURN

Institution	Group	Total Population	Size of Sample	Sample Percentage	Actual Return Number	Percentage Return
King Saud University	Administrators	9	9	100%	9	100%
	Instructors	84	42	50%	41	97.61%
	Senior Students	85	43	50%	40	93%
King Faisal University	Administrators	12	12	100%	11	91.66%
	Instructors	48	48	100%	36	75.0%
	Senior Students	14	14	100%	14	100%
The Agricultural Institute	Administrators	2	2	100%	2	100%
	Instructors	19	19	100%	19	100%
	Senior Students	75	38	50%	37	97.36%
Ministry of Agriculture and Water Main Branches and the Agricultural Bank Main Branches	Directors	30	30	100%	29	96.66%
Total		378	257		238	

Collecting Data

The researcher spent two and one-half months traveling from one area to another as was required within Saudi Arabia. During that time, personal interviews were conducted either individually or with groups, explaining responses needed.

Forms of the questionnaire were distributed to the respondents. The questionnaires and/or the schedule interview forms had been translated into the Arabic language and pre-tests were conducted. Thus, it was felt that clarification and consistency of items and/or meaning was relatively assured.

Treatment of Data

Data were collated by using SAS package at Oklahoma State University Computer Center. Means and ranks were calculated for each individual groups as well as for groups within the respective institution included in the study. Absolute limits for assessing values had been predetermined and are shown in Figures 4, 5, 6, and 7 on pages 33 and 34 (Chapter III).

Responses of Directors of the Ministry of Agriculture and Water Regional Branches and the Agricultural Bank Main Branches as to Composition and Source of Training of Agricultural Employees

An attempt was made to find out the approximate composition of the agricultural employees of the Ministry of Agriculture and Water

Regional Branches and the Agricultural Bank Main Branches. The two divisions were found to essentially be in agreement, hence the combined composition pattern is shown below. To reconcile question B on the interview schedule as shown in Appendix A, Form D, it should be related that when each separate interview was made, the interviewee was told that other than question one, the response requested was to provide the approximate percentage falling in each category for Saudies only.

		Approximate Percentage
A.	Composition of Agricultural Employees:	
	1. Non-Saudies	70-80%
	2. Saudies	20-30%
B.	Of the Saudies employees, place of training was received:	
	1. King Saud University	70-85%
	2. King Faisal University	Under 10%
	3. The Agricultural Institute	Under 10%
	4. No higher education	Under 10%
	5. Graduate of other agricultural institutes from another country	Under 10%
	6. Graduate of university from another country	None

The number of non-Saudies varies from 70 to 80 percent as far as the average is concerned, leaving 20 to 30 percent of the agricultural employees being Saudies. In an additional attempt to find out where those employees have received training, again directors were unanimous in responding that 70 to 85 percent of the Saudies employeed had received

training from King Saud University. Each of the other sources of training, King Faisal University, the Agricultural Institute, and the Agricultural Institutes in another country were under 10 percent. A very small number indicated under 10 percent further reported that they have no higher education, while there was no Saudi agricultural employees who graduated from universities in another country and who works in those branches as agricultural specialists.

Relative Importance and Student Adequacy of Selected Areas in the Agricultural Curriculum

Agricultural Economics, Rural Sociology, and Agricultural Extension

It can be readily seen in Table IV, all nine items listed in this area were judged by administrators at all institutions as either "important" or "very important". The highest ranked item by the combined group was "farm management" rated with a mean of 3.82, "very important". Administrators also gave a relatively high rating for student adequacy in the item, farm management, while administrators at the Agricultural Institute gave a slightly higher rating for this item than did the administrators at King Saud University and King Faisal University. For the combined group of administrators, this item received the highest ranking in terms of student adequqcy and was ranked first among the nine items. However, in terms of importance with the highest rating of 3.82 was given by the combined group of administrators.

TABLE IV

JUDGMENTS OF ADMINISTRATORS AND DIRECTORS AS TO RELATIVE IMPORTANCE AND STUDENT ADEQUACY IN SELECTED ASPECTS OF AGRICULTURAL ECONOMICS, RURAL SOCIOLOGY AND AGRICULTURAL EXTENSION

ITEMS	KING SAUD UNIVERSITY Administrators; N=9			KING FAISAL UNIVERSITY Administrators; N=11			THE AGRICULTURAL INSTITUTE Administrators; N=2			ALL SCHOOLS Administrators Combined Group; N=9+11+2=22					MINISTRY OF AGRICULTURE AND WATER REGIONAL BRANCHES AND THE AGRICULTURAL BANK MAIN BRANCHES Directors; N=29				
	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Rank	Student Adequacy	Rank	Importance		Rank	Student Adequacy	Rank
	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating		Mean		Mean	Rating		Mean	
1. Rural social development and leadership.	3.33	V I	3.00	3.83	V I	3.60	3.5	V I	3.5	3.55	V I	6	3.36	3	3.48	I	6	2.86	3
2. Saudi agricultural economics.	3.88	V I	3.50	3.42	I	3.00	4.0	V I	2.5	3.77	V I	3	3.00	4	3.75	V I	1	2.96	2
3. Marketing and agricultural accounting.	3.77	V I	3.00	3.66	V I	3.20	4.0	V I	4.0	3.81	V I	2	3.4	2	3.51	V I	5	2.78	4
4. Farm management.	3.88	V I	3.00	3.57	V I	3.50	4.0	V I	4.0	3.82	V I	1	3.50	1	3.64	V I	4	2.72	5
5. Agricultural cooperatives.	3.37	I	2.80	3.16	I	2.60	3.5	V I	1.5	3.34	I	8	2.30	8	3.41	I	8	2.66	7
6. Statistic and research methods.	4.11	V I	2.80	3.14	I	2.83	3.00	I	1.5	3.41	I	7	2.37	7	3.46	I	7	2.66	6
7. Using computer in agriculture.	3.66	V I	2.16	2.33	S I	1.80	2.5	I	1.5	2.83	I	9	1.82	9	2.89	I	9	1.12	9
8. Agricultural Extension planning.	3.33	I	3.00	3.43	I	2.83	4.0	V I	2.00	3.58	V I	5	2.61	6	3.72	V I	3	2.57	8
9. Extension teaching and demonstration.	3.33	I	3.00	3.71	V I	3.16	4.0	V I	2.5	3.68	V I	4	2.88	5	3.75	V I	2	3.06	1

Note: Symbols used in Rating

E I = Extremely Important
V I = Very Important
I = Important
S I = Slightly Important
L I = Little or No Importance

Administrators from each of the three schools differed in rating the item "using computer in agriculture" in the area of agricultural economics and agricultural extension. Administrators from King Saud University rated this item as "very important" while administrators from King Faisal University rated it as "slightly important", compared to administrators from the Agricultural Institute who rated this item as only "important". Both the combined group of administrators and the directors from the Ministry of Agriculture and Water and the Agricultural Bank rated this item lowest.

Responses from directors of the Ministry of Agriculture and Water, Regional Branches and the Agricultural Bank, Main Branches differed somewhat with regard to certain items. For instance, directors did not indicate by their ranking that "farm management" was quite as important as did administrators at the Universities and the Agricultural Institute. However, their rating was the same "very important". When making a judgment as to "extension teaching and demonstration", both in terms of importance and student adequacy, directors of the Ministry of Agriculture and Water, Regional Branches and the Agricultural Bank, Main Branches ranked this item higher than administrators from the three agricultural institutions as a combined group.

With regard to instructors at King Saud University, King Faisal University, and the Agricultural Institute, data presented in Table V show their judgment concerning the items in the area "Agricultural Economics, Rural Sociology and Agricultural Extension", the highest rating was given to "Saudi Agricultural Economics"; this being given by instructors at each of the three institutions as well as by the

TABLE V

JUDGMENTS OF INSTRUCTORS AS TO RELATIVE IMPORTANCE AND STUDENT ADEQUACY IN SELECTED ASPECTS OF AGRICULTURAL ECONOMIC, RURAL SOCIOLOGY AND AGRICULTURAL EXTENSION

Items	KING SAUD UNIVERSITY Instructors; N=41			KING FAISAL UNIVERSITY Instructors; N=36			THE AGRICULTURAL INSTITUTE Instructors; N=19			ALL SCHOOLS Combined Groups; N=41+36+19=96				
	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Rank	Student Adequacy	Rank
	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating		Mean	
1. Rural social development and leadership.	3.62	V I	3.40	3.84	V I	3.30	3.93	V I	3.31	3.80	V I	4	3.34	4
2. Saudi agricultural economics.	4.02	V I	3.61	4.00	V I	3.25	4.00	V I	3.80	4.00	V I	1	3.55	1
3. Marketing and agricultural accounting.	3.64	V I	3.30	3.56	V I	3.15	3.61	V I	3.06	3.60	V I	5	3.17	5
4. Farm management.	3.97	V I	3.60	4.00	V I	3.23	4.00	V I	3.26	3.99	V I	2	3.36	2
5. Agricultural cooperatives.	3.23	I	2.84	3.34	I	3.21	2.94	I	2.50	3.17	I	8	2.85	8
6. Statistic and research methods.	3.81	V I	3.26	3.88	V I	3.26	2.77	I	2.30	3.49	I	7	2.94	7
7. Using computer in agriculture.	3.28	I	1.73	3.32	I	3.00	2.12	S I	1.93	2.91	I	9	2.22	9
8. Agricultural extension planning.	3.56	V I	3.08	3.56	V I	3.07	3.50	V I	2.92	3.54	V I	6	3.02	6
9. Extension teaching and demonstration.	3.65	V I	3.20	3.83	V I	3.30	3.94	V I	3.57	3.81	V I	3	3.36	3

Note: Symbols used in Rating

E I = Extremely Important
V I = Very Important
I = Important
S I = Slightly Important
L I = Little or No Importance

combined group, this item also was given the highest rank, while directors gave slighly lower ranking although they rated the item as "important". The lowest rating was given to the item "agricultural cooperative" both by individual and combined group. The slight differences is to be noted with regard to the item "using computer in agriculture", whereas instructors from King Saud University rated this item as "very important" albeit of low student adequacy. Instructors from King Faisal University rated this item "important" and slightly higher in student adequacy. Instructors from the Agricultural Institute rated "using computer in agriculture" as "slightly important", and again recognized low student adequacy. But as a combined group, this item was rated as "important" yet ranked as the lowest item. Directors were also in agreement with instructors with regard to this item. However, instructors either as individual or combined group, they rated each of the nine items either "very important" or "important" except for instructors from the Agricultural Institute, who rated "using computer in agriculture" as "slightly important" with a mean of 2.12.

Responses received from senior students at King Saud University, King Faisal University, and the Agricultural Institute were shown in Table VI concerning the area, "Agricultural Economics, Rural Sociology, and Agricultural Extension", and it can be said that, all nine items were rated by senior students either "important" or "very important". This revealed by the responses from senior students both individual groups and a combined group. They seem to be in agreement with instructors concerning the item "Saudi Agricultural Economics" since they gave high rating to this item and high ranking in terms of importance and a second place ranking regarding student adequacy. Within the students

TABLE VI

JUDGMENTS OF SENIOR STUDENTS AS TO RELATIVE IMPORTANCE AND STUDENT ADEQUACY IN SELECTED ASPECTS OF AGRICULTURAL ECONOMICS, RURAL SOCIOLOGY AND AGRICULTURAL EXTENSION

ITEMS	KING SAUD UNIVERSITY Senior Students; N=40			KING FAISAL UNIVERSITY Senior Students; N=14			'THE AGRICULTURAL INSTITUTE Senior Students; N=37			ALL SCHOOLS Combined Groups; 40+14+37=91				
	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Rank	Student Adequacy	Rank
	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating		Mean	
1. Rural social development and leadership.	3.33	I	2.75	3.55	V I	3.57	3.77	V I	3.00	3.55	V I	5	3.11	4
2. Saudi agricultural economics.	3.70	V I	3.06	3.70	V I	3.75	3.88	V I	2.94	3.76	V I	1	3.25	2
3. Marketing and agricultural accounting.	3.48	I	2.58	3.44	I	4.14	3.38	I	2.75	3.43	I	6	3.16	3
4. Farm management.	3.55	V I	2.60	3.80	V I	3.50	3.61	V I	2.88	3.65	V I	3	2.99	6
5. Agricultural cooperatives.	2.82	I	2.40	3.22	I	3.28	3.54	V I	2.59	3.19	I	8	2.76	8
6. Statistic and research methods.	3.42	I	2.77	3.50	V I	3.40	3.13	I	2.46	3.35	I	7	2.88	7
7. Using computer in agriculture.	3.06	I	2.83	2.60	I	2.00	3.34	I	2.06	3.00	I	9	2.29	9
8. Agricultural Extension planning.	3.38	I	2.71	3.75	V I	3.57	3.65	V I	2.84	3.59	V I	4	3.04	5
9. Extension teaching and demonstration.	3.48	I	3.12	3.66	V I	3.80	4.00	V I	2.97	3.71	V I	2	3.29	1

Note: Symbols used in Rating

E I = Extremely Important
V I = Very Important
I = Important
S I = Slightly Important
L I = Little or No Importance

groups they all agreed in terms of student adequacy. Students did differ in terms of the importance of the item, "Extension Teaching and Demonstration", whereas senior students from King Saud University rated it "important", senior students from King Faisal as well as the Agricultural Institute rated it "very important". As a combined group of students, the rating was "very important" with a mean of 3.76. Also, students ranked it second in terms of importance and first in terms of student adequacy. Both as individuals and/or a combined group, the item "Farm Management" was rated by students as "very important". This showed their agreement with instructors and directors concerning the item "Farm Management", but differed slightly from the responses of their administrators.

Plant Production and Plant Protection

Data in Table VII show the ratings given by administrators from the Colleges of Agriculture, the Agricultural Institute, and directors for various selected items in the area, Plant Production and Plant Protection, while each group of administrators gave slightly different ratings concerning the item "Vegetables"; the highest rating as by both, individual and a combined group, this item received rating of "very important". However, administrators at King Saud University and the Agricultural Institute both rated the item "Vegetables" as "extremely important" while administrators at King Faisal University and directors of the Ministry of Agriculture and Water, Regional Branches and the Agricultural Bank, Main Branches viewed the same item as "very important". The combined group ranked the item in importance first and second in terms of student adequacy.

TABLE VII

JUDGMENTS OF ADMINISTRATORS AND DIRECTORS AS TO RELATIVE IMPORTANCE AND STUDENT ADEQUACY IN SELECTED ASPECTS OF PLANT PRODUCTION AND PLANT PROTECTION

ITEMS	KING SAUD UNIVERSITY Administrators; N=9			KING FAISAL UNIVERSITY Administrators; N=11			THE AGRICULTURAL INSTITUTE Administrators; N=2			ALL SCHOOLS Administrators Combined Group; N=9+11+2=22					MINISTRY OF AGRICULTURE AND WATER REGIONAL BRANCHES AND THE AGRICULTURAL BANK MAIN BRANCHES Directors; N=29				
	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Rank	Student Adequacy	Rank	Importance		Rank	Student Adequacy	Rank
	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating		Mean		Mean	Rating		Mean	
1. Nurseries and floriculture.	3.71	V I	3.80	3.33	I	3.20	4.5	E I	4.5	3.84	V I	9	3.83	7	3.44	I	9	2.67	11
2. Plant nutrition.	3.88	V I	3.66	3.83	V I	3.50	4.5	E I	4.0	4.07	V I	6	3.72	8	3.58	V I	8	2.86	7
3. Plant physiology.	4.11	V I	4.00	3.85	V I	3.83	4.0	V I	4.0	3.98	V I	7	3.94	3	3.27	I	12	2.64	12
4. Plant pathology. (Bacterial & fungi diseases)	4.11	V I	4.00	4.33	I	3.60	4.5	E I	4.0	4.31	V I	3	3.86	6	4.03	V I	3	3.13	5
5. Field crops.	4.66	E I	4.00	4.00	V I	3.66	4.5	E I	4.5	4.38	V I	2	4.05	1	4.00	V I	5	3.53	1
6. Vegetables.	4.88	E I	4.16	4.00	V I	3.40	4.5	E I	4.5	4.46	V I	1	4.02	2	4.06	V I	1	3.48	2
7. Fruit production.	4.44	V I	3.83	4.00	V I	3.40	4.5	E I	4.5	4.31	V I	4	3.91	5	4.03	V I	4	3.37	3
8. Plant breeding & genetics.	4.22	V I	3.83	3.33	I	3.03	4.0	V I	4.0	3.85	V I	8	3.61	9	3.34	I	11	2.82	8
9. Insect physiology.	3.22	I	2.80	3.00	I	3.50	3.0	I	2.0	3.07	I	15	2.76	16	2.96	I	16	2.53	14
10. Agricultural microbiology.	3.77	V I	3.50	3.40	I	2.80	2.5	I	4.0	3.22	I	14	3.43	12	3.17	I	14	2.62	13
11. Insects and pests control.	4.12	V I	4.16	4.16	V I	3.60	4.0	V I	4.0	4.09	V I	5	3.92	4	4.06	V I	2	3.22	4
12. Forage and forestry.	4.11	V I	4.00	3.00	I	2.60	3.5	V I	2.5	3.53	V I	13	3.03	15	3.37	I	10	2.89	6
13. Useful insects. (Example: Bees)	3.44	I	3.66	3.33	I	2.80	4.5	E I	4.0	3.75	V I	10	3.48	11	3.62	V I	7	2.50	15
14. Toxicology.	2.85	I	3.25	3.00	I	3.75	3.0	I	2.5	2.95	I	16	3.16	14	3.24	I	13	2.34	16
15. Nematology.	3.71	V I	3.40	3.00	I	3.20	4.0	V I	4.0	3.57	V I	12	3.53	10	3.82	V I	6	2.68	10
16. Landscape.	3.85	V I	3.33	3.16	I	2.80	4.0	V I	3.5	3.67	V I	11	3.21	13	3.14	I	15	2.80	9

Note: Symbols used in Rating

E I = Extremely Important
V I = Very Important
I = Important
S I = Slightly Important
L I = Little or No Importance

The lowest rating in terms of importance given by administrators was the item "Toxicology", which nevertheless was given an "important" rating even though it was rated the lowest item in this area both by individual and combined groups. Directors were given the same rating, "important", yet ranked it lower than did directors even though they gave the same rating.

As a combined group, administrators gave a rating of "very important" to all items except "insect physiology", "Agricultural Microbiology", and Toxicology". These three items were given a rating of "important" by all school administrators. Directors while agreeing with administrators that these three items were "important", also rated four other items as "important" rather than "very important"; their additional items were (a) nurseries and floriculture, (b) plant physiology, (c) forage and forestry and (d) landscaping.

Regarding instructors' judgment concerning the area, "Plant Production and Plant Production", data in Table VIII show that the highest rating was given to the item "Field Crops" as a combined group with only slightly difference in terms of means shown for individual groups, but all gave the same level of importance "very important", and they ranked it as first in terms of importance and third in terms of student adequacy. The item "Vegetables" also received a high level rating of "very important" from the combined group of instructors; whereas instructors from King Saud University and King Faisal University gave it a "very important" rating.

It should be noted that instructors from the Agricultural Institute gave it an even higher rating that of "extremely important" with a mean

TABLE VIII

JUDGMENTS OF INSTRUCTORS AS TO RELATIVE IMPORTANCE AND STUDENT ADEQUACY IN SELECTED ASPECTS OF PLANT PRODUCTION AND PLANT PROTECTION

Items	KING SAUD UNIVERSITY Instructors; N=41			KING FAISAL UNIVERSITY Instructors; N=36			THE AGRICULTURAL INSTITUTE Instructors; N=19			ALL SCHOOLS Combined Groups; N=41+36+19=96				
	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Rank	Student Adequacy	Rank
	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating		Mean	
1. Nurseries and floriculture.	3.38	I	3.66	3.86	V I	3.46	4.38	E I	3.75	3.87	V I	6	3.62	6
2. Plant nutrition.	3.94	V I	3.85	3.86	V I	3.07	3.64	V I	3.46	3.81	V I	7	3.46	7
3. Plant physiology.	3.88	V I	3.57	3.72	V I	3.76	2.94	I	2.93	3.51	V I	12	3.42	9
4. Plant pathology. (Bacterial & fungi diseases)	4.28	V I	3.95	4.08	V I	3.93	4.11	V I	4.00	4.16	V I	5	3.96	2
5. Field crops.	4.30	V I	3.80	4.27	V I	3.81	4.61	E I	3.93	4.39	V I	1	3.85	3
6. Vegetables.	4.25	V I	3.90	4.18	V I	4.00	4.57	E I	4.05	4.33	V I	2	3.98	1
7. Fruit production.	4.16	V I	3.80	3.90	V I	3.50	4.57	E I	3.87	4.21	V I	3	3.72	4
8. Plant breeding & genetics.	3.83	V I	3.77	3.50	V I	3.50	3.61	V I	3.06	3.64	V I	9	3.44	8
9. Insect physiology.	3.48	I	3.21	3.04	I	3.50	2.66	I	2.43	3.06	I	14	3.04	12
10. Agricultural microbiology.	3.78	V I	3.40	3.31	I	3.00	2.88	I	2.73	3.32	I	13	3.04	14
11. Insects and pests control.	4.30	V I	3.85	3.95	V I	3.85	4.33	V I	3.33	4.19	V I	4	3.68	5
12. Forage and forestry.	3.80	V I	3.70	3.18	I	2.90	3.58	V I	2.53	3.52	V I	11	3.04	13
13. Useful insects. (Example: Bees)	3.69	V I	3.50	3.36	I	3.36	4.11	V I	3.31	3.72	V I	8	3.39	10
14. Toxicology.	3.38	I	3.28	2.81	I	2.38	2.11	S I	1.86	2.77	I	16	2.51	16
15. Nematology.	3.50	V I	3.55	3.13	I	3.07	2.38	S I	2.40	3.00	I	15	3.00	15
16. Landscape.	3.34	I	3.47	3.31	I	2.92	4.21	V I	3.64	3.62	V I	10	3.34	11

Note: Symbols used in Rating

E I = Extremely Important
V I = Very Important
I = Important
S I = Slightly Important
L I = Little or No Importance

of 4.57. The combined group of instructors ranked "Vegetables" second in terms of importance and first in terms of student adequacy.

The item "Toxicology" also received a low rating by all the instructors as a combined group with slight difference between individual groups. The item also was given the lowest ranking of sixteenth both in terms of importance and student adequacy by the combined groups of instructors.

In general, instructors responses were that most of the items in this area were given either "important" or "very important" rating except, "Toxicology" and "Nematology" which were given a rating of "slightly important" by instructors from the Agricultural Institute.

With regard to senior students' ratings of items in the area, Plant Production and Plant Protection, data in Table IX show that the highest rating given by a combined group of "very important" with a mean of 4.24 was "Plant Pathology". This was true for senior students both at Colleges of Agriculture and the Agricultural Institute.

In keeping with the high rating, students also ranked it first in terms of importance. However, senior students ranked it third in terms of student adequacy. Senior students from the three schools tended to agree with instructors concerning the item "Insect Physiology" which was rated as "important" was given the lowest rating of sixteenth. The same item was ranked fifteenth in terms of student adequacy.

The items "Field Crops" and "Vegetables" received the same rating which is "very important" and was ranked by senior students fourth and third, respectively. This rating and ranking was very close to that given by instructors. In terms of student adequacy, the same item was given second and fourth rankings by senior students and this was very close to that given by instructors. The item "Toxicology" also

TABLE IX

JUDGMENTS OF SENIOR STUDENTS AS TO RELATIVE IMPORTANCE AND STUDENT ADEQUACY IN SELECTED ASPECTS OF PLANT PRODUCTION AND PLANT PROTECTION

ITEMS	KING SAUD UNIVERSITY Senior Students; N=40			KING FAISAL UNIVERSITY Senior Students; N=14			THE AGRICULTURAL INSTITUTE Senior Students; N=37			ALL SCHOOLS Combined Groups; 40+14+37=91				
	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Rank	Student Adequacy	Rank
	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating		Mean	
1. Nurseries and floriculture.	3.27	I	2.96	3.09	I	3.50	3.53	V I	3.04	3.29	I	12	3.16	5
2. Plant nutrition.	3.37	I	2.89	3.90	V I	3.25	3.94	V I	2.82	3.74	V I	7	2.99	9
3. Plant physiology.	3.06	I	2.68	3.69	V I	3.72	3.13	I	2.25	3.29	I	13	2.89	12
4. Plant pathology. (Bacterial & fungi diseases)	4.12	V I	3.16	4.38	V I	3.76	4.21	V I	3.14	4.24	V I	1	3.35	3
5. Field crops.	4.00	V I	2.93	4.00	V I	4.00	3.86	V I	3.35	3.95	V I	4	3.43	2
6. Vegetables.	3.97	V I	3.05	4.16	V I	3.40	3.83	V I	3.05	3.99	V I	3	3.17	4
7. Fruit production.	3.77	V I	2.93	3.92	V I	3.33	3.91	V I	3.11	3.87	V I	5	3.12	6
8. Plant breeding & genetics.	3.09	I	2.27	3.70	V I	3.25	3.88	V I	2.97	3.50	V I	9	2.83	13
9. Insect physiology.	2.58	I	2.22	3.20	I	3.25	3.35	I	2.02	3.04	I	16	2.50	15
10. Agricultural microbiology.	3.21	I	2.75	3.53	V I	3.41	3.02	I	2.00	3.26	I	14	2.72	14
11. Insects and pests control.	4.15	V I	3.20	4.41	V I	4.18	4.02	V I	3.06	4.19	V I	2	3.48	1
12. Forage and forestry.	3.20	I	2.56	3.25	I	3.30	3.51	V I	2.84	3.32	I	11	2.90	11
13. Useful insects. (Example: Bees)	3.19	I	2.28	4.00	V I	3.40	4.08	V I	3.25	3.76	V I	6	2.97	10
14. Toxicology.	2.89	I	2.19	3.00	I	2.62	3.78	V I	2.28	3.22	I	15	2.36	16
15. Nematology.	3.70	V I	3.24	3.90	V I	3.22	3.57	V I	2.53	3.72	V I	8	2.99	8
16. Landscape.	3.24	I	2.76	3.50	V I	3.40	3.89	V I	3.03	3.54	V I	10	3.06	7

Note: Symbols used in Rating

E I = Extremely Important
V I = Very Important
I = Important
S I = Slightly Important
L I = Little or No Importance

received the same level of rating "important" by individual and combined group of senior students, yet as ranked only fifteenth in terms of importance and sixteenth in terms of student adequacy.

In general, all other items in this area received a rating level of "very important" or "important" by senior students from the three schools.

Agricultural Mechanics and Soil Science

With regard to the area, Agricultural Mechanics and Soil Science, data presented in Tables X, XI and XII show that administrators, instructors, and senior students gave the highest rating to the item "Irrigation and Drainage", with a combined group of administrators, showing a mean of 4.39, instructors as a combined group 4.34, and senior students as a combined group 4.19. In each case, the rating being "very important" and the ranking first. With regard to student adequacy for the item "Irrigation and Drainage", again each of the three groups gave a first place ranking for the item. These highest ratings and rankings were in contrast to those given by directors of the Ministry of Agriculture and Water, Regional Branches and the Agricultural Bank, Main Branches who gave the same item a rating of "very important" with a mean of 3.93 and ranking a second in terms of importance and student adequacy.

Data in Table X further reveals that the combined group of administrators and directors gave the same level of rating and ranking to the item "Food Processing Engineering" which was the lowest. Where administrators from King Saud University gave it a "very important", administrators from King Faisal University and directors gave it a

TABLE X

JUDGMENTS OF ADMINISTRATORS AND DIRECTORS AS TO RELATIVE IMPORTANCE AND STUDENT ADEQUACY IN SELECTED ASPECTS OF AGRICULTURAL MECHANICS AND SOIL SCIENCE

ITEMS	KING SAUD UNIVERSITY Administrators; N=9			KING FAISAL UNIVERSITY Administrators; N=11			THE AGRICULTURAL INSTITUTE Administrators; N=2			ALL SCHOOLS Administrators Combined Group; N=9+11+2=22				MINISTRY OF AGRICULTURE AND WATER REGIONAL BRANCHES AND THE AGRICULTURAL BANK MAIN BRANCHES Directors; N=29			
	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Rank	Student Adequacy	Rank	Importance		Rank	Student Adequacy	Rank
	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating				Mean	Rating		Mean	
1. Irrigation and drainage.	4.66	E I	4.00	4.00	V I	3.5	4.5	E I	4.0	4.39	V I	1	3.83	1	3.93	V I	2	2.89	2
2. Irrigation engineering.	4.00	V I	3.37	3.85	V I	3.0	4.0	V I	3.5	3.95	V I	5	3.18	6	3.44	I	7	2.37	7
3. Surveying.	3.62	V I	3.12	2.85	I	3.0	3.5	V I	3.5	3.32	I	11	3.20	4	3.13	I	11	3.68	4
4. Food processing engineering.	3.66	V I	3.22	3.14	I	2.0	2.0	S I	1.0	2.93	I	12	2.07	12	2.93	I	12	2.11	11
5. Agricultural machines and workshop.	4.50	E I	3.42	3.85	V I	2.75	4.5	E I	3.5	4.28	V I	2	3.22	3	3.93	V I	3	2.75	3
6. Machine maintenance and safety.	4.11	V I	3.25	3.42	I	3.0	4.5	E I	3.0	4.01	V I	4	3.08	8	3.64	V I	6	2.22	10
7. Soil morphology & erosion.	3.44	I	3.62	4.00	V I	3.25	3.5	V I	2.5	3.64	V I	8	3.12	7	3.27	I	9	2.35	8
8. Soil chemistry.	3.33	I	3.57	3.50	V I	3.00	4.0	V I	3.0	3.61	V I	10	3.19	5	3.17	I	10	2.03	12
9. Soil fertilization and fertilizers.	4.62	E I	3.57	3.71	V I	3.80	4.5	V I	4.0	4.27	V I	3	3.79	2	4.07	V I	1	2.96	1
10. Soil conservation.	3.11	I	3.33	3.83	V I	3.75	4.0	V I	1.5	3.64	V I	9	2.86	11	3.42	I	8	2.25	9
11. Soil-water relationship.	3.44	I	3.25	3.66	V I	3.50	4.0	V I	2.5	3.70	V I	6	3.08	9	3.92	V I	4	2.66	5
12. Maintaining stabilization planting.	3.66	V I	3.40	3.33	I	3.00	4.0	V I	2.5	3.66	V I	7	2.96	10	3.70	V I	5	2.62	6

Note: Symbols used in Rating

E I = Extremely Important
V I = Very Important
I = Important
S I = Slightly Important
L I = Little or No Importance

level of rating of "important". However, it should be noted that administrators from the Agricultural Institute judged it as only "slightly important".

The item "Soil Fertilization and Fertilizer" received a judgment by all administrators from the three schools as well as directors of either "extremely important" or "very important" and ranked third in terms of importance by the combined group; however, this item was ranked first by directors. Nevertheless, in terms of student adequacy, the combined group of administrators ranked this item second as compared to directors who ranked it first.

Data regarding the same area received ratings of instructors from King Saud University, King Faisal University and the Agricultural Institute, and presented in Table XI where the item "Irrigation and Drainage" received the highest rating by the combined group compared to other items in this area and ranking first in terms of both importance and student adequacy. However, there was a difference between instructors responses from one school to another. Since instructors from King Saud University and King Faisal University rated as "very important", instructors from the Agricultural Institute rated it "extremely important".

While the lowest rating by instructors was given to the item "Soil Conservation" in terms of student adequacy with ranking of twelfth and tenth place in terms of importance, however, this relatively low ranking should not negate that instructors at both Universities rated the item to be "very important" and the combined group gave the item "Soil Conservation" an "important".

TABLE XI

JUDGMENTS OF INSTRUCTORS AS TO RELATIVE IMPORTANCE AND STUDENT ADEQUACY IN SELECTED ASPECTS OF AGRICULTURAL MECHANICS AND SOIL SCIENCE

Items	KING SAUD UNIVERSITY Instructors; N=41			KING FAISAL UNIVERSITY Instructors; N=36			THE AGRICULTURAL INSTITUTE Instructors; N=19			ALL SCHOOLS Combined Groups; N=41+36+19=96				
	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Rank	Student Adequacy	Rank
	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating		Mean	
1. Irrigation and drainage.	4.21	V I	3.61	4.30	V I	3.64	4.50	E I	3.60	4.34	V I	1	3.62	1
2. Irrigation engineering.	3.86	V I	3.40	3.45	I	2.85	3.33	I	3.00	3.55	V I	7	3.08	6
3. Surveying.	3.61	V I	3.33	3.45	I	3.71	3.27	I	2.66	3.44	I	8	3.23	4
4. Food processing engineering.	3.52	V I	3.10	2.20	S I	2.66	2.94	I	2.50	3.22	I	12	2.78	11
5. Agricultural machines and workshop.	4.25	V I	3.42	3.86	V I	3.61	4.21	V I	3.81	4.11	V I	2	3.61	2
6. Machine maintenance and safety.	3.76	V I	3.14	3.50	V I	2.61	3.83	V I	3.13	3.69	V I	4	2.96	8
7. Soil morphology & erosion.	3.81	V I	3.14	3.34	I	3.27	3.16	I	2.60	3.44	I	9	3.00	7
8. Soil chemistry.	3.72	V I	3.33	3.43	I	3.18	2.73	I	2.31	3.30	I	11	2.94	9
9. Soil fertilization and fertilizers.	4,02	V I	3.57	4.12	V I	3.30	4.05	V I	3.75	4.06	V I	3	3.54	3
10. Soil conservation.	3.59	V I	3.00	3.69	V I	3.00	2.94	I	2.26	3.41	I	10	2.75	12
11. Soil-water relationship.	4.08	V I	3.42	3.60	V I	3.16	3.39	I	3.00	3.69	V I	5	3.19	5
12. Maintaining stabilization planting.	3.75	V I	3.29	3.34	I	2.72	3.66	V I	2.66	3.59	V I	6	2.89	10

Note: Symbols used in Rating

E I = Extremely Important
V I = Very Important
I = Important
S I = Slightly Important
L I = Little or No Importance

Groups differed in judgment as to the importance of the instruction for the items "Food Processing Engineering". Instructors from King Saud University rated it as "very important", while instructors from King Faisal University rated it as "slightly important" and instructors from the Agricultural Institute rated it as "important". Only slight differences between the three groups of instructors were shown in terms of rating levels of student adequacy.

In general, it should be pointed out that instructors from King Saud University rated all items in the area "Agricultural Mechanics and Soil Science" as "very important". Instructors from King Faisal University rated the same items as either "important" or "very important" except the item "Food Processing Engineering", which received a relatively low rating of only "slightly important". Instructors from the Agricultural Institute rated the same items either "important" or "very important" except the item "Irrigation and Drainage" which received a rating of "extremely important".

With regard to judgments given by senior students from the three agricultural schools, data presented in Table XII are essentially in agreement with administrators and instructors as a combined group. Agreeing with administrators and instructors, students gave the item "Irrigation and Drainage" the highest rating with a mean of 4.26 and ranking it first both in terms of importance and student adequacy. As individual groups from the different institutions, the same item differed slightly in rating, senior students from King Saud University and the Agricultural Institute rating it as "very important", but senior students from King Faisal University rating it as "extremely important".

TABLE XII

JUDGMENTS OF SENIOR STUDENTS AS TO RELATIVE IMPORTANCE AND STUDENT ADEQUACY IN SELECTED ASPECTS OF AGRICULTURAL MECHANICS AND SOIL SCIENCES

ITEMS	KING SAUD UNIVERSITY Senior Students; N=40			KING FAISAL UNIVERSITY Senior Students; N=14			THE AGRICULTURAL INSTITUTE Senior Students; N=37			ALL SCHOOLS Combined Groups; 40+14+37=91				
	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Rank	Student Adequacy	Rank
	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating		Mean	
1. Irrigation and drainage.	3.65	V I	2.65	4.66	E I	3.81	4.26	V I	3.08	4.19	V I	1	3.18	1
2. Irrigation engineering.	3.38	I	2.59	4.45	V I	3.66	3.70	V I	2.37	3.84	V I	4	2.87	4
3. Surveying.	3.08	I	2.48	3.92	V I	3.46	3.37	I	2.14	3.46	I	9	2.69	9
4. Food processing engineering.	2.90	I	2.37	3.90	V I	3.25	3.52	V I	2.30	3.44	I	10	2.64	11
5. Agricultural machines and workshop.	3.58	V I	2.65	4.15	V I	3.38	4.02	V I	2.90	3.92	V I	3	2.98	3
6. Machine maintenance and safety.	3.23	I	2.26	3.70	V I	3.37	4.00	V I	2.78	3.64	V I	7	2.81	6
7. Soil morphology & erosion.	3.14	I	2.28	3.61	V I	3.50	3.54	V I	2.35	3.43	I	11	2.71	8
8. Soil chemistry.	3.13	I	2.03	3.76	V I	3.50	3.16	I	2.00	3.35	I	12	2.51	12
9. Soil fertilization and fertilizers.	3.96	V I	2.81	3.91	V I	3.90	3.91	V I	2.70	3.93	V I	2	3.14	2
10. Soil conservation.	3.17	I	2.34	3.75	V I	3.20	3.78	V I	2.50	3.56	V I	8	2.68	10
11. Soil-water relationship.	3.39	I	2.32	3.84	V I	3.50	3.82	V I	2.63	3.68	V I	6	2.81	5
12. Maintaining stabilization planting.	3.62	V I	2.38	3.66	V I	3.40	4.08	V I	2.44	3.78	V I	5	2.74	7

Note: Symbols used in Rating

E I = Extremely Important
V I = Very Important
I = Important
S I = Slightly Important
L I = Little or No Importance

It was determined that the lowest rating and ranking by senior students was given to the item in "Soil Chemistry" with a combined group mean of 3.35. Senior students at the three schools were in agreement in terms of importance of the item "Agricultural Machines and Workshop" rating it as "very important".

It was noted that senior students from King Saud University rated all items in this area as either "important" or "very important". Senior students from King Faisal University rated the items "very important" except the item "Irrigation and Drainage" which received a rating of "extremely important". Senior students from the Agricultural Institute ratd all items as "very important" except the items "Survey" and "Soil Chemistry" which received a rating of only "important".

Animal Production and Food Technology

With regard to this area, judgments given by administrators at the three schools are listed in Table XIII. These data show that the item "Animal Nutrition" received the relatively high rating of "very important", this by the combined group. However, in terms of ranking, administrators showed the item ranking fifth when student adequacy was considered. By comparison, directors also gave this item a rating of "very important" but ranked it third in terms of importance and second in terms of student adequacy.

However, even though administrators from all schools agreed upon the level of importance, which was "very important", directors while in agreement did show a slight difference in means.

The item, "Poultry Science" was given the relatively high rating of "very important" by directors and ranked first both in terms of

TABLE XIII

JUDGMENTS OF ADMINISTRATORS AND DIRECTORS AS TO RELATIVE IMPORTANCE AND STUDENT ADEQUACY IN SELECTED ASPECTS OF ANIMAL PRODUCTION AND FOOD TECHNOLOGY

ITEMS	KING SAUD UNIVERSITY Administrators; N=9			KING FAISAL UNIVERSITY Administrators; N=11			THE AGRICULTURAL INSTITUTE Administrators; N=2			ALL SCHOOLS Administrators Combined Group; N=9+11+2=22				MINISTRY OF AGRICULTURE AND WATER REGIONAL BRANCHES AND THE AGRICULTURAL BANK MAIN BRANCHES Directors; N=29			
	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Rank	Student Adequacy	Rank	Importance		Rank	Student Adequacy	Rank
	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating		Mean		Mean	Rating		Mean	
1. Animal physiology.	3.85	V I	3.40	3.50	V I	3.50	3.50	V I	2.50	3.61	V I	8	3.13	7	3.27	I	9	2.50	5
2. Animal nutrition.	4.44	V I	3.85	3.50	V I	3.00	4.00	V I	3.00	3.98	V I	1	3.28	5	3.75	V I	3	2.72	2
3. Animal breeding.	4.11	V I	3.85	3.20	I	3.00	4.50	E I	4.00	3.93	V I	3	3.61	1	3.68	V I	5	2.57	4
4. Poultry science. (Physiology, breeding, disease control, nutrition, etc.)	4.22	V I	3.85	3.60	V I	3.50	4.00	V I	3.00	3.94	V I	2	3.45	2	4.10	V I	1	3.03	1
5. Livestock management.	3.66	V I	3.42	3.20	I	3.25	4.00	V I	3.00	3.62	V I	7	3.22	6	3.75	V I	4	2.72	3
6. Animal health. (Diseases and parasitic control)	3.88	V I	3.57	3.60	V I	3.25	4.00	V I	3.50	3.82	V I	4	3.44	3	3.86	V I	2	2.48	6
7. Dairy products analysis.	3.55	V I	3.00	3.33	I	3.75	3.50	V I	2.00	3.46	I	10	2.91	8	2.93	I	11	2.07	10
8. Dairy product processing.	3.66	V I	3.28	3.50	V I	3.50	4.00	V I	3.50	3.72	V I	6	3.42	4	3.28	I	8	2.18	8
9. Food processing & preservation.	3.66	V I	3.00	3.50	V I	3.20	3.50	V I	2.00	3.55	V I	9	2.73	9	3.34	I	7	2.17	9
10. Food inspection.	3.44	I	2.85	3.33	I	3.00	4.50	E I	2.00	3.75	V I	5	2.61	10	3.00	I	10	1.85	11
11. Human nutrition.	3.62	V I	2.57	2.83	I	3.00	3.50	V I	2.00	3.31	I	11	2.52	11	3.37	I	6	2.25	7
12. Seafood & meat technology.	3.33	I	2.33	2.66	I	2.80	1.00	L I	1.00	2.33	S I	12	2.04	12	2.82	I	12	1.51	12
13. Courses related to ocean science.	3.11	I	1.83	2.50	I	2.80	1.00	L I	1.00	2.20	S I	13	1.87	13	2.55	I	13	1.32	13

Note: Symbols used in Rating

E I = Extremely Important
V I = Very Important
I = Important
S I = Slightly Important
L I = Little or No Importance

importance and student adequacy among the items in this area; while administrators gave it the same level of judgment of "very important", they ranked it second both in terms of importance and student adequacy, this prevailing for the combined group.

Administrators from the three agricultural schools also were quite low for item "Courses Related to Ocean Science". They ranked this item thirteenth among the items in this area both in terms of importance and student adequacy. However, when respondents from each individual school were compared, they were found to differ somewhat. Administrators from King Saud University considered it "important" as compared to administractors from the Agricultural Institute who considered it of "little or no importance". As a combined group, administrators considered it as "slightly important" compared to directors who considered the same item as "important".

Generally, it can be noted that all items in the area, Animal Production and Food Technology, were given a rating of either "important" or "very important" by administrators from King Saud University and King Faisal University, while they received either "important" or "very important" by administrators from the Agricultural Institute except the items "Animal Breeding" and "Food Inspection" which received rating of "extremely important". Compared to these administrators ratings, directors ratings were either "important" or "very important".

Ratings received by instructors from the three agricultural schools concerning the area of "Animal Production and Food Technology" are listed in Table XIV. The item "Animal Nutrition" was given relatively the highest rating of "very important" and the rank of first both in terms of importance and student adequacy, as a judgment of the combined group.

TABLE XIV

JUDGMENTS OF INSTRUCTORS AS TO RELATIVE IMPORTANCE AND STUDENT ADEQUACY IN SELECTED ASPECTS OF ANIMAL PRODUCTION AND FOOD TECHNOLOGY

Items	KING SAUD UNIVERSITY Instructors; N=41			KING FAISAL UNIVERSITY Instructors; N=36			THE AGRICULTURAL INSTITUTE Instructors; N=19			ALL SCHOOLS Combined Groups; N=41+36+19=96				
	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Rank	Student Adequacy	Rank
	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating		Mean	
1. Animal physiology.	4.08	V I	3.47	3.59	V I	3.40	3.15	I	3.13	3.61	V I	8	3.33	5
2. Animal nutrition.	4.26	V I	4.00	4.18	V I	3.70	4.33	V I	3.42	4.25	V I	1	3.70	1
3. Animal breeding.	4.21	V I	3.80	4.13	V I	3.40	4.11	V I	3.80	4.15	V I	3	3.66	2
4. Poultry science. (Physiology, breeding, disease control, nutrition, etc.)	4.28	V I	3.95	3.90	V I	3.50	4.27	V I	3.53	4.15	V I	2	3.66	3
5. Livestock management.	3.86	V I	3.31	3.85	V I	3.30	3.77	V I	3.06	3.83	V I	5	3.22	7
6. Animal health. (Diseases and parasitic control)	4.10	V I	3.23	3.68	V I	3.40	3.73	V I	3.37	3.84	V I	4	3.33	4
7. Dairy products analysis.	3.56	V I	3.27	3.26	I	3.22	3.22	I	2.73	3.35	I	10	3.07	9
8. Dairy product processing.	3.81	V I	3.43	3.47	I	3.20	3.77	V I	3.31	3.69	V I	7	3.31	6
9. Food processing & preservation.	3.76	V I	3.52	3.66	V I	2.90	3.66	V I	3.00	3.69	V I	6	3.14	8
10. Food inspection.	3.94	V I	3.36	3.40	I	3.11	2.93	I	2.00	3.43	I	9	2.82	11
11. Human nutrition.	3.71	V I	3.30	3.47	I	3.40	2.81	I	2.15	3.33	I	11	2.95	10
12. Seafood & meat technology.	3.29	I	3.09	3.00	I	2.55	2.43	S I	1.66	2.91	I	12	2.43	12
13. Courses related to ocean science.	2.88	I	2.84	2.59	I	2.44	2.00	S I	1.30	2.49	S I	13	2.19	13

Note: Symbols used in Rating

E I = Extremely Important
V I = Very Important
I = Important
S I = Slightly Important
L I = Little or No Importance

The item of "Poultry Science" received a rating of "very important" and ranked second in terms of importance and third in terms of student adequacy. Groups from each individual school showed slight difference in terms of means but the same level of rating.

The lowest rating and ranking were given to the item of "Courses Related to Ocean Science" with a mean of 2.49 and a rank of thirteenth among the items in this area, where all the items were given either a rating of "important" or "very important" by the instructors from the three groups except those items of "Seafood" and "Courses Related to Ocean Science" which received a rating of "slightly important" by the instructors from the Agricultural Institute as well as the combined group.

Concerning judgments given by senior students regarding the area of "Animal Production" and "Food Technology", these data are presented in Table XV. Findings show that the item "Animal Nutrition" received the relatively high rating of "very important" both by individual group and the combined group of senior students. This item, "Animal Nutrition", was ranked first among the 13 items in this area in terms of importance, but in terms of student adequacy it was ranked sixth. The items "Seafood and Meat Technology" and "Courses related to Ocean Sciences" received both the lowest and second lowest ranking and rating both by individual and combined groups of senior students in terms of importance as well as student adequacy.

General Courses

With regard to the area of general courses, administrators from the three agricultural schools gave their judgment as presented in Table XVI.

TABLE XV

JUDGMENTS OF SENIOR STUDENTS AS TO RELATIVE IMPORTANCE AND STUDENT ADEQUACY IN SELECTED ASPECTS OF ANIMAL PRODUCTION AND FOOD TECHNOLOGY

ITEMS	KING SAUD UNIVERSITY Senior Students; N=40			KING FAISAL UNIVERSITY Senior Students; N=14			THE AGRICULTURAL INSTITUTE Senior Students; N=37			ALL SCHOOLS Combined Groups; 40+14+37=91				
	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Rank	Student Adequacy	Rank
	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating		Mean	
1. Animal physiology.	3.09	I	2.62	3.80	V I	3.55	3.87	V I	2.60	3.58	V I	11	2.92	9
2. Animal nutrition.	3.96	V I	2.62	4.33	V I	3.60	4.00	V I	2.82	4.10	V I	1	3.01	6
3. Animal breeding.	3.59	V I	2.68	4.09	V I	3.90	3.97	V I	2.80	3.88	V I	7	3.12	3
4. Poultry science. (Physiology, breeding, disease control, nutrition, etc.)	4.11	V I	3.18	4.33	V I	3.90	3.51	V I	2.77	3.98	V I	5	3.28	1
5. Livestock management.	3.67	V I	2.55	3.83	V I	3.80	3.83	V I	2.82	3.78	V I	8	3.06	5
6. Animal health. (Diseases and parasitic control)	3.51	V I	2.64	4.45	V I	3.44	4.02	V I	2.94	3.99	V I	4	3.01	7
7. Dairy products analysis.	3.43	I	2.51	3.90	V I	3.66	3.68	V I	2.57	3.67	V I	9	2.91	10
8. Dairy product processing.	3.86	V I	2.93	4.25	V I	3.45	3.94	V I	2.91	4.02	V I	2	3.10	4
9. Food processing & preservation.	3.93	V I	3.07	4.27	V I	3.60	3.70	V I	2.88	3.96	V I	6	3.18	2
10. Food inspection.	3.48	I	2.75	3.72	V I	3.33	3.74	V I	2.25	3.65	V I	10	2.78	11
11. Human nutrition.	3.74	V I	2.79	4.30	V I	3.54	3.97	V I	2.52	4.00	V I	3	2.95	8
12. Seafood & meat technology.	3.10	I	2.21	3.45	V I	3.33	3.25	I	1.79	3.26	I	12	2.44	12
13. Courses related to ocean science.	2.14	S I	1.65	3.27	I	3.40	3.16	I	1.62	2.86	I	13	2.22	13

Note: Symbols used in Rating

E I = Extremely Important
V I = Very Important
I = Important
S I = Slightly Important
L I = Little or No Importance

TABLE XVI

JUDGMENTS OF ADMINISTRATORS AND DIRECTORS AS TO RELATIVE IMPORTANCE AND STUDENT ADEQUACY IN SELECTED ASPECTS OF GENERAL COURSES

ITEMS	KING SAUD UNIVERSITY Administrators; N=9			KING FAISAL UNIVERSITY Administrators; N=11			THE AGRICULTURAL INSTITUTE Administrators; N=2			ALL SCHOOLS Administrators Combined Group; N=9+11+2=22				MINISTRY OF AGRICULTURE AND WATER REGIONAL BRANCHES AND THE AGRICULTURAL BANK MAIN BRANCHES Directors; N=29				
	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Rank	Student Adequacy	Rank	Importance		Rank	Student Adequacy	Rank
	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating		Mean		Mean	Rating		Mean	
1. Organic chemistry.	3.77	V I	3.28	4.00	V I	3.37	3.0	I	1.0	3.59	V I	6	2.55	8	3.31	I	6	2.44	7
2. Geology.	2.77	I	2.71	3.00	I	2.00	2.0	S I	1.5	2.59	I	11	2.07	10	3.10	I	9	2.27	9
3. Physics.	3.55	V I	3.14	3.37	I	3.00	4.0	V I	2.5	3.64	V I	4	2.88	5	2.93	I	10	2.25	10
4. General chemistry.	4.11	V I	4.00	3.66	V I	3.28	4.0	V I	2.5	3.92	V I	2	3.26	3	3.20	I	8	2.57	6
5. Arabic languages.	2.66	I	2.57	2.71	I	2.00	4.5	E I	2.5	3.29	I	9	2.35	9	3.42	I	4	2.96	4
6. Islamic culture.	3.00	I	3.28	3.28	I	3.00	4.5	E I	2.5	3.59	V I	5	2.92	4	3.58	V I	3	3.35	1
7. Mathematics.	4.22	V I	3.50	4.00	V I	2.60	3.5	V I	2.5	3.90	V I	3	2.86	6	3.24	I	7	2.75	5
8. Calculus.	3.66	V I	2.83	3.42	I	2.20	1.0	L I	1.0	2.69	I	10	2.01	11	2.82	I	11	2.25	11
9. Biochemistry.	3.77	V I	3.16	4.00	V I	3.14	3.0	I	2.0	3.59	V I	7	2.76	7	3.34	I	5	2.39	8
10. General plant.	4.44	V I	4.14	3.88	V I	3.00	4.0	V I	3.0	4.11	V I	1	3.38	2	4.10	V I	1	3.21	2
11. General zoology.	4.11	V I	4.14	3.62	V I	2.83	3.0	I	4.0	3.57	V I	8	3.65	1	4.03	V I	2	3.10	3

Note: Symbols used in Rating
E I = Extremely Important
V I = Very Important
I = Important
S I = Slightly Important
L I = Little or No Importance

It appeared that the item "General Plant" (Botany) received a high rating of "very important" both by individual and combined groups of administrators, with a combined group mean of 4.11; thus ranking first in terms of importance and second in terms of student adequacy. By comparison directors gave the same judgment both in terms of rating and ranking. The lowest rating was given to the item "Geology" in terms of importance with a mean of 2.59 and was also ranked eleventh among the items in this area. The same item received a relatively lower ranking by the group in terms of student adequacy. Directors gave it a rating of "important" and a ranking of ninth, both in terms of importance and student adequacy. A more noticeable difference occurred between administrators from the three schools and directors, this in regard to the item "Physics". Administrators considered it as "very important" and ranked it fourth in terms of importance and fifth in terms of student adequacy, while directors gave a rating of "important" and ranked it 10 in terms of importance and student adequacy.

The other item which received almost the same judgment by both directors and administrators was "Calculus". Administrators rated it "important" with a mean of 2.69 and ranked it tenth in terms of importance and eleventh in terms of student adequacy, while the same item received the same level of judgment of "important" by directors and ranked eleventh both in terms of importance and student adequacy.

However, all items in this area received a judgment of "important" or "very important" by administrators from King Saud University, King Faisal University and directors, but administrators from the Agricultural Institute gave a relatively higher judgment to some items such as "Arabic Language" and "Islamic Culture" rating these "extremely

important", as contrasted with the item "Geology" given a rating of only "slightly important" by administrators at the Agricultural Institute.

Regarding the judgment given by instructors from the three agricultural schools which is listed in Table XVII, data show that the item "Islamic Culture" again received the highest rating of "very important" by the combined group of instructors with a mean of 4.16 and a ranking of first, both in terms of importance and student adequacy. However, the individual groups gave the same level of importance with a slight difference in mean score. The second item in terms of importance is "General Plant" (Botany) which was given second place in ranking and rated "very important".

The lowest rating, with a mean of 3.11 and eleventh place in ranking, was given to the item "Calculus", this both in terms of importance and student adequacy.

It is obvious that instructors from King Saud University considered that all the items in the area "General Courses" are "very important". The same ratings were given by instructors from King Faisal University except the item "Geology" which was given a rating of only "important". In a like manner, instructors from the Agricultural Institute expressed their judgment that the items "Geology" and "Calculus" are only "slightly important".

Data received by senior students concerning the area of "General Courses" are presented in Table XVIII and show that the item "Islamic Culture" received the highest rating by the combined group of students with a mean of 4.17 and also was ranked the first in terms of importance and student adequacy. Similar judgments were given by each individual group. Another item which received a relatively high rating was

TABLE XVII

JUDGMENTS OF INSTRUCTORS AS TO RELATIVE IMPORTANCE AND STUDENT ADEQUACY IN SELECTED ASPECTS OF GENERAL COURESES

Items	KING SAUD UNIVERSITY Instructors; N=41			KING FAISAL UNIVERSITY Instructors; N=36			THE AGRICULTURAL INSTITUTE Instructors; N=19			ALL SCHOOLS Combined Groups; N=41+36+19=96				
	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Rank	Student Adequacy	Rank
	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating		Mean	
1. Organic chemistry.	4.22	V I	3.38	4.28	V I	3.07	2.62	I	2.23	3.70	V I	8	2.89	8
2. Geology.	3.81	V I	2.85	3.47	I	3.00	2.37	S I	1.76	3.22	I	10	2.53	10
3. Physics.	3.81	V I	2.77	4.08	V I	3.08	2.55	I	2.00	3.48	I	9	2.61	9
4. General chemistry.	4.18	V I	3.52	4.20	V I	3.28	2.77	I	2.33	3.72	V I	7	3.04	5
5. Arabic languages.	3.60	V I	3.04	3.91	V I	3.70	3.70	V I	3.26	3.74	V I	4	3.33	3
6. Islamic culture.	3.97	V I	3.33	4.13	V I	3.54	4.38	V I	3.60	4.16	V I	1	3.49	1
7. Mathematics.	4.09	V I	3.04	4.12	V I	3.07	3.00	I	2.85	3.73	V I	5	2.99	6
8. Calculus.	3.65	V I	2.85	3.54	V I	2.76	2.13	S I	1.33	3.11	I	11	2.31	11
9. Biochemistry.	4.23	V I	3.25	4.33	V I	3.21	2.62	I	2.23	3.73	V I	6	2.89	7
10. General plant.	4.21	V I	3.33	4.39	V I	3.63	3.63	V I	3.06	4.07	V I	2	3.34	2
11. General zoology.	4.19	V I	3.36	4.13	V I	3.58	3.42	I	2.81	3.91	V I	3	3.25	4

Note: Symbols used in Rating
E I = Extremely Important
V I = Very Important
I = Important
S I = Slightly Important
L I = Little or No Importance

TABLE XVIII

JUDGMENTS OF SENIOR STUDENTS AS TO RELATIVE IMPORTANCE AND STUDENT ADEQUACY IN SELECTED ASPECTS OF GENERAL COURSES

ITEMS	KING SAUD UNIVERSITY Senior Students; N=40			KING FAISAL UNIVERSITY Senior Students; N=14			THE AGRICULTURAL INSTITUTE Senior Students; N=37			ALL SCHOOLS Combined Groups; 40+14+37=91				
	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Rank	Student Adequacy	Rank
	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating		Mean	
1. Organic chemistry.	3.23	I	2.70	4.14	V I	3.58	3.89	V I	1.70	3.60	V I	7	2.66	7
2. Geology.	2.75	I	2.12	3.53	V I	3.36	3.45	I	1.72	3.22	I	10	2.40	11
3. Physics.	2.87	I	2.51	3.50	V I	3.33	3.44	I	1.77	3.11	I	11	2.54	10
4. General chemistry.	3.25	I	2.64	4.00	V I	3.50	3.48	I	2.08	3.50	V I	8	2.74	6
5. Arabic languages.	3.00	I	2.62	4.25	V I	3.50	3.94	V I	2.94	3.77	V I	4	3.02	4
6. Islamic culture.	3.95	V I	3.08	4.35	V I	4.00	4.32	V I	3.08	4.17	V I	1	3.39	1
7. Mathematics.	3.42	I	2.54	4.07	V I	4.00	4.27	V I	2.20	3.63	V I	6	2.91	5
8. Calculus.	3.23	I	2.61	3.50	V I	3.50	4.25	V I	1.66	3.28	I	9	2.59	8
9. Biochemistry.	3.31	I	2.20	4.35	V I	3.75	4.51	E I	1.80	3.68	V I	5	2.58	9
10. General plant.	3.95	V I	3.29	4.57	E I	3.83	4.19	V I	2.18	4.06	V I	2	3.10	2
11. General zoology.	4.00	V I	3.20	4.42	V I	3.83	3.75	V I	2.17	3.98	V I	3	3.06	3

Note: Symbols used in Rating
E I = Extremely Important
V I = Very Important
I = Important
S I = Slightly Important
L I = Little or No Importance

"General Plant" (Botany) which rated "very important" and was ranked second with regard to importance and student adequacy.

The item "Physics" received the lowest rating by students with a mean of 3.11 by the combined group and only ranked eleventh in terms of importance and tenth in terms of student adequacy. Also the same can be said regarding the item "Geology" which ranked tenth in terms of importance and eleventh in terms of student adequacy.

However, individual groups gave slightly different judgments in terms of importance to each of the items in the area of "General Courses"; whereas senior students from King Saud University rated the items either "important" or "very important"; their counterparts from King Faisal University rated all the items "very important" except the item "General Plant" (Botany) which received a rating of "extremely important".

Senior students from the Agricultural Institute rated these same items as either "important" or "very important" except the item "Biochemistry", which they rated "extremely important".

Summer Internship (Training)

With regard to items which might be included in the area, "Summer Internship"(Training), judgments given by administrators are shown in Table XIX. These data show that the item "Agricultural Mechanics" received the highest rating, "very important" by the combined group with a very high mean of 4.45, ranking first in terms of importance but only sixth in terms of student adequacy. Directors responded to the needs for summer training for this item by also showing a rating

TABLE XIX

JUDGMENTS OF ADMINISTRATORS AND DIRECTORS AS TO RELATIVE IMPORTANCE AND STUDENT ADEQUACY IN SELECTED ASPECTS OF SUMMER INTERNSHIP (TRAINING)

ITEMS	KING SAUD UNIVERSITY Administrators; N=9			KING FAISAL UNIVERSITY Administrators; N=11			THE AGRICULTURAL INSTITUTE Administrators; N=2			ALL SCHOOLS Administrators Combined Group; N=9+11+2=22				MINISTRY OF AGRICULTURE AND WATER REGIONAL BRANCHES AND THE AGRICULTURAL BANK MAIN BRANCHES Directors; N=29				
	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Rank	Student Adequacy	Rank	Importance		Rank	Student Adequacy	Rank
	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating		Mean		Mean	Rating		Mean	
1. Agricultural mechanics.	4.75	E I	3.62	4.11	V I	2.85	4.5	E I	3.5	4.45	V I	1	3.32	6	4.27	V I	1	2.66	5
2. Agricultural economics.	3.25	I	2.28	3.33	I	2.75	4.0	V I	3.5	3.52	V I	8	3.17	7	3.79	V I	7	2.51	7
3. Extension planning.	3.37	I	3.57	4.00	V I	3.00	4.0	V I	3.5	3.40	I	9	3.01	8	3.82	V I	6	2.62	6
4. Extension teaching and demonstration.	3.75	V I	3.57	4.00	V I	3.00	4.0	V I	3.5	3.91	V I	3	3.35	4	4.13	V I	3	2.82	2
5. Plant production & protection.	4.12	V I	3.57	4.14	V I	3.20	4.0	V I	3.5	4.08	V I	2	3.42	2	4.17	V I	2	2.93	1
6. Food technology & dairy science.	4.00	V I	3.37	3.66	V I	3.00	3.5	V I	1.5	3.72	V I	7	2.62	9	3.31	I	10	2.35	10
7. Animal production.	4.00	V I	3.71	3.66	V I	3.00	4.0	V I	3.5	3.88	V I	4	3.40	3	3.51	V I	9	2.67	4
8. Soil science.	3.87	V I	3.33	3.57	V I	3.20	4.0	V I	3.5	3.81	V I	5	3.34	5	3.62	V I	8	2.44	8
9. Poultry production.	3.75	V I	4.00	3.66	V I	3.00	4.0	V I	3.5	3.80	V I	6	3.50	1	3.96	V I	4	2.82	3
10. Adult education and adoption of new practices.	2.83	I	2.00	3.14	I	2.60	3.0	I	1.0	2.99	V I	10	1.86	10	3.89	V I	5	2.42	9

Note: Symbols used in Rating
E I = Extremely Important
V I = Very Important
I = Important
S I = Slightly Important
L I = Little or No Importance

of "very important" for "Agricultural Mechanics", ranking it first in terms of importance, but only fifth in terms of student adequacy. The second item to receive a relatively high rating was "Plant Production and Plant Protection" rated as "very important" by the combined group with a mean of 4.08 and ranked second both in terms of importance and student adequacy. The same rating "very important", was given this item by directors who also ranked it second among the item in this area, but differing in terms of ranking of student adequacy. Directors ranked this first.

A relatively lower rating was given by administrators to the item "Adult Education and Adoption of New Practices" which received a rating of "important" with a combined group mean of 2.99 and a lowest or tenth place ranking. Directors did not agree, however, with a mean of 3.89 and a rating of "very important". Further, they ranked the item in fifth place. The item "Food Technology and Dairy Science" received the relatively lower ratings of importance by directors with a mean of 3.31 "important" and ranking tenth among the 10 items in this area both in terms of importance and student adequacy. These ratings and rankings by directors as compared to administrators ranked it seventh and gave a rating "very important" but ranked it ninth in terms of student adequacy.

However, administrators from King Saud University and the Agricultural Institute rated all items in this area as either "important" or "very important", except the item "Agricultural Mechanics" which was given a rating of "extremely important". Administrators from King Faisal University and directors gave a rating of "important" or "very important" to all the items in this area.

Instructors from the three agricultural schools gave a judgment concerning the area "Summer Internship (Training)" as listed in Table XX and it appeared that the item "Agricultural Mechanics" was given a relatively high rating of "very important" both by individual groups and the combined group with a combined group rating mean of 4.30. They further ranked it first in terms of importance and third in terms of student adequacy. A second item which was given the same rating of importance both by individual and combined groups was "Plant Production and Plant Protection" ranking second in terms of importance as well as student adequacy.

It is obvious that, in terms of mean scores, instructors gave the lowest rating to the item "Adult Education and Adoption of New Practices" but with a slight difference in terms of mean scores between groups.

Generally, all instructors from the three agricultural schools gave a judgment of "very important" to all the items in this area.

A comparison of the judgments of senior students from the three agricultural schools with regard to Summer Internship (Training) appears in Table XXI. It is quite evident that similar rating and ranking were given by senior students to those given by administrators, directors, and instructors to the item "Agricultural Mechanics" in terms of importance with only a very slight difference in terms of mean scores. All different student groups from the three schools gave the same ratings as to importance with only a slight difference between the mean for each group.

However, students did give a relatively slightly lower rating to the item "Extension Planning" which was rated by the combined group as

TABLE XX

JUDGMENTS OF INSTRUCTORS AS TO RELATIVE IMPORTANCE AND STUDENT ADEQUACY IN SELECTED ASPECTS OF SUMMER INTERNSHIP (TRAINING)

Items	KING SAUD UNIVERSITY Instructors; N=41			KING FAISAL UNIVERSITY Instructors; N=36			THE AGRICULTURAL INSTITUTE Instructors; N=19			ALL SCHOOLS Combined Groups; N=41+36+19=96				
	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Rank	Student Adequacy	Rank
	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating		Mean	
1. Agricultural mechanics.	4.35	V I	3.30	4.13	V I	3.27	4.44	V I	3.66	4.30	V I	1	3.41	3
2. Agricultural economics.	3.78	V I	3.09	3.50	V I	2.66	3.50	V I	3.00	3.59	V I	10	2.91	8
3. Extension planning.	3.83	V I	3.00	3.77	V I	2.11	3.66	V I	3.14	3.75	V I	8	2.75	9
4. Extension teaching and demonstration.	4.25	V I	3.13	3.90	V I	2.22	4.38	V I	3.50	4.18	V I	3	2.95	7
5. Plant production & protection.	4.25	V I	3.45	4.22	V I	3.40	4.15	V I	3.43	4.21	V I	2	3.43	2
6. Food technology & dairy science.	4.00	V I	3.19	3.75	V I	2.76	3.94	V I	3.21	3.89	V I	7	3.05	6
7. Animal production.	4.30	V I	3.40	3.95	V I	3.54	4.27	V I	3.42	4.18	V I	4	3.46	1
8. Soil science.	3.94	V I	3.22	3.68	V I	3.41	3.61	V I	2.71	3.74	V I	9	3.11	5
9. Poultry production.	4.25	V I	3.69	3.86	V I	3.09	4.22	V I	3.28	4.11	V I	5	3.35	4
10. Adult education and adoption of new practices.	3.56	V I	2.52	3.86	V I	2.36	4.37	V I	2.25	3.93	V I	6	2.37	10

Note: Symbols used in Rating

E I = Extremely Important
V I = Very Important
I = Important
S I = Slightly Important
L I = Little or No Importance

TABLE XXI

JUDGMENTS OF SENIOR STUDENTS AS TO RELATIVE IMPORTANCE AND STUDENT ADEQUACY IN SELECTED ASPECTS OF SUMMER INTERNSHIP (TRAINING)

ITEMS	KING SAUD UNIVERSITY Senior Students; N=40			KING FAISAL UNIVERSITY Senior Students; N=14			THE AGRICULTURAL INSTITUTE Senior Students; N=37			ALL SCHOOLS Combined Groups; 40+14+37=91				
	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Student Adequacy	Importance		Rank	Student Adequacy	Rank
	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating	Mean	Mean	Rating		Mean	
1. Agricultural mechanics.	4.15	V I	2.51	4.46	V I	3.77	4.17	V I	2.72	4.26	V I	1	3.00	7
2. Agricultural economics.	3.78	V I	2.67	3.84	V I	3.60	4.05	V I	2.83	3.89	V I	8	3.03	3
3. Extension planning.	3.43	I	2.30	3.58	V I	3.33	3.86	V I	2.41	3.62	V I	10	2.68	10
4. Extension teaching and demonstration.	4.00	V I	2.66	4.00	V I	3.22	4.50	E I	3.02	4.16	V I	3	2.97	8
5. Plant production & protection.	4.00	V I	2.72	4.08	V I	3.50	4.21	V I	2.86	4.09	V I	4	3.02	4
6. Food technology & dairy science.	3.96	V I	2.82	4.21	V I	3.45	3.59	V I	2.80	3.92	V I	7	3.02	5
7. Animal production.	4.06	V I	3.22	4.30	V I	3.55	4.17	V I	2.90	4.18	V I	2	3.22	1
8. Soil science.	3.87	V I	2.92	3.92	V I	3.70	3.55	V I	2.40	3.78	V I	9	3.01	6
9. Poultry production.	4.19	V I	3.03	4.30	V I	3.80	3.55	V I	2.63	4.01	V I	6	3.15	2
10. Adult education and adoption of new practices.	3.73	V I	2.07	4.07	V I	3.50	4.43	V I	2.71	4.08	V I	5	2.76	9

Note: Symbols used in Rating

E I = Extremely Important
V I = Very Important
I = Important
S I = Slightly Important
L I = Little or No Importance

"very important" with a mean of 3.62. This must be recognized as the lowest mean among the items in this area. This item, "Extension Planning" was ranked as tenth both in terms of importance and student adequacy. With only a slight difference between senior student groups from the three agricultural schools shown by items' means, all senior students rated the items as "very important" except the item "Extension Planning" was given an "important" level of rating by senior students from King Saud University and the item "Extension Teaching and Demonstration" which was given a level of rating of "extremely important" by senior students from the Agricultural Institute.

Importance of Selected Factors, Items, and Procedures When Developing and Implementing the Agricultural Curricula

Judgments were received from administrators from the three agricultural schools and directors of the Ministry of Agriculture and Water Regional Branches and the Agricultural Bank Main Branches concerning the relative importance of selected factors, items and procedures when developing and implementing the agricultural curricula for training agricultural specialists and are presented in Table XXII. Data show that the highest emphasis in terms of importance was considered to be the statement "Securing evidence that the teaching faculty strongly committed to exerting a special effort to provide effective training for professional agriculturalists". This statement ranked first among the 16 statements in this area. Directors did not place emphasis upon this statement, so they ranked it seventh. Instead they thought that

TABLE XXII

JUDGMENTS OF ADMINISTRATORS AND DIRECTORS AS TO RELATIVE IMPORTANCE OF SELECTED FACTORS, ITEMS AND PROCEDURES

Statements	KING SAUD UNIVERSITY Administrators; N-9		KING FAISAL UNIVERSITY Administrators; N-11		THE AGRICULTURAL INSTITUTE Administrators; N-2		ALL SCHOOLS Combined Groups; N-22			MINISTRY OF AGRICULTURE AND WATER REGIONAL BRANCHES AND AGR. BANK MAIN BRANCHES Directors; N-29		
	Degree of Importance		Degree of Importance		Degree of Importance		Degree of Importance		Rank	Degree of Importance		Rank
	Mean	Rating*	Mean	Rating*	Mean	Rating*	Mean	Rating*		Mean	Rating*	
1. Assessment of performance of graduates on the job.	4.44	I	4.70	VI	4.0	I	4.38	I	3	4.48	I	3
2. Securing involvement of Branch and Regional Directors through seminars and workshops.	3.44	U	3.90	I	3.0	U	3.44	U	15	4.51	VI	2
3. Securing involvement of college of agriculture and the agricultural institute students in determining their needs, interests and aspirations.	3.55	I	3.90	I	3.0	U	3.48	U	14	4.10	I	12
4. Assessment of the extent of cooperative efforts and involvement between administration and teaching faculty of the university and other agricultural agencies and organizations.	4.11	I	4.45	VI	4.0	I	4.18	I	5	4.41	I	5
5. Securing involvement of graduates now serving in agricultural positions.	3.77	I	4.36	I	4.0	I	4.04	I	8	4.44	I	4
6. Securing involvement of non-Saudies now serving in agricultural positions.	2.88	U	3.72	I	3.5	I	3.37	U	16	3.24	U	16
7. Securing involvement of selected farmers through agricultural offices.	3.11	U	4.44	I	4.0	I	3.85	I	9	3.96	I	14
8. Securing involvement of consultants from other countries.	3.77	I	4.10	I	3.5	I	3.79	I	11	3.79	I	15
9. Giving due study and consideration to culture and tradition as these have affected teaching, learning and adoption of agricultural practices.	3.22	U	4.09	I	4.0	I	3.77	I	12	4.00	I	13
10. Securing copies of and studying reference to job descriptions and/or official regulations which affect the work of agriculturalists.	4.00	I	3.80	I	3.0	U	3.60	I	13	4.13	I	11
11. Securing evidence that institutional administrators are committed to a special effort to provide effective training for professional agriculturalists.	4.66	VI	4.36	I	2.5	U	3.84	I	10	4.31	I	8
12. Securing evidence that the teaching faculty is strongly committed to exerting a special effort to provide effective training for professional agriculturalists.	4.77	VI	4.63	VI	4.0	I	4.47	I	1	4.33	I	7
13. Securing evidence that the teaching faculty is encouraged to become aware of and develop an interest in solving important problems encountered in agricultural development.	4.11	I	4.27	I	4.0	I	4.12	I	6	4.24	I	10
14. Securing evidence that institutional administrators are willing to place emphasis upon further development and implementation of indigenous agricultural research services.	3.88	I	4.54	VI	4.5	VI	4.31	I	4	4.41	I	6
15. Securing evidence that teaching faculty are willing to place emphasis upon the further development and implementation of indigenous agricultural research services.	4.44	I	4.45	I	4.5	VI	4.46	I	2	4.55	VI	1
16. Securing evidence that institutional administrators attempt to give high priority to the allocation of resources to program preparing professional agriculturalists.	4.11	I	4.20	I	4.0	I	4.10	I	7	4.27	I	9

*Rating Symbols

V I = Very Important; I = Important; U = Undecided; L I = Little Importance; N I = No Importance

the statement "securing evidence that teaching faculty is willing to place emphasis upon the further development and implementation of indigenous agricultural research services" was of paramount importance so that they ranked it first while the administrators ranked the item second. An obvious difference in rating is very clear concerning the statement "securing involvement of Branch and Regional Directors through seminars and workshops". Administrators as a combined group ranked this statement only fifteenth as compared to directors who ranked it second.

Both administrators as a combined group and directors are in agreement that the item "securing involvement of non-Saudis now serving in agricultural positionsis definitely not of importance and need not be considered in developing and implementing the Agricultural Curricula".

However, as an individual group, administrators from King Saud University rated statements 1, 3, 4, 5, 8, 10, 13, 14, 15 and 16 as "important". Items 11 and 12 were rated "very important", and items 2, 6, 7 and 9 were rated undecided.

Administrators from King Faisal University judged the statements 2, 3, 5, 6, 7, 8, 9, 10, 11, 13 15 and 16 as "important" and statements 1, 4, 12 and 14 as "very important". Administrators from the Agricultural Institute rated statements 1, 4, 9, 12, 13 and 16 as "important", statements 2, 3, 10 and 11 as "undecided" and statements 14 and 15 as "very important".

Directors gave all the statements either an "important" or "very important" rating, except statement 6 which received an "undecided" rating. This was the same statement with regard to consultation with Non-Saudies as was rated low by other groups.

Instructors from the three agricultural schools gave their rating concerning the importance of selected factors, items and procedures in developing and implementing the agricultural curricula. As these data are presented in Table XXXIII which show that the highest rating was given to the statement "assessment of performance of graduate on the job" with a combined group mean of 4.61. However, the instructors from King Faisal University rated it as "important" while instructors from King Saud University and the Agricultural Institute considered this item as "very important". Second ranking was given by the combined group to the statement "securing evidence that teaching faculty is willing to place emphasis upon further development and implementation of indigenous agricultural research" with a mean of 4.55 and rating of "very important".

It is clear that the statement "securing involvement of Colleges of Agriculture and the Agricultural Institute students in determining their needs, interests, and aspirations" received the lowest ranking as well as the lowest mean of 3.82, as was given by instructors to any statement in this area.

Generally, all instructor groups from the three agricultural schools gave ratings of either "important" or "very important" to all factors, items and procedures in this area.

Judgments secured from senior students with regard to the relative importance of selected factors, items and procedures in developing and implementing the agricultural curricula are presented in Table XXIV and show that the highest student rating was given to statement "securing evidence that the teaching faculty strongly committed to

TABLE XXIII

JUDGMENTS OF INSTRUCTORS AS TO RELATIVE IMPORTANCE OF SELECTED FACTORS, ITEMS AND PROCEDURES

Statements	KING SAUD UNIVERSITY Instructors; N=41		KING FAISAL UNIVERSITY Instructors; N=36		THE AGRICULTURAL INSTITUTE Instructors; N=19		ALL SCHOOLS Combined Groups; 41+36+19=96		
	Degree of Importance		Degree of Importance		Degree of Importance		Degree of Importance		Rank
	Mean	Rating*	Mean	Rating*	Mean	Rating*	Mean	Rating*	
1. Assessment of performance of graduates on the job.	4.68	VI	4.45	I	4.70	VI	4.61	VI	1
2. Securing involvement of Branch and Regional Directors through seminars and workshops.	4.15	I	3.64	I	4.27	I	4.02	I	13
3. Securing involvement of college of agriculture and the agricultural institute students in determining their needs, interests and aspirations.	3.85	I	3.51	I	4.11	I	3.82	I	16
4. Assessment of the extent of cooperative efforts and involvement between administration and teaching faculty of the university and other agricultural agencies and organizations.	4.43	I	4.05	I	4.38	I	4.29	I	7
5. Securing involvement of graduates now serving in agricultural positions.	4.38	I	4.05	I	4.55	VI	4.33	I	5
6. Securing involvement of non-Saudies now serving in agricultural positions.	3.85	I	3.80	I	4.50	VI	4.05	I	12
7. Securing involvement of selected farmers through agricultural offices.	3.75	I	4.00	I	4.13	I	4.02	I	14
8. Securing involvement of consultants from other countries.	3.90	I	4.11	I	4.44	I	4.15	I	11
9. Giving due study and consideration to culture and tradition as these have affected teaching, learning and adoption of agricultural practices.	4.07	I	4.19	I	4.22	I	4.16	I	10
10. Securing copies of and studying reference to job descriptions and/or official regulations which affect the work of agriculturalists.	4.04	I	3.62	I	4.16	I	3.94	I	15
11. Securing evidence that institutional administrators are committed to a special effort to provide effective training for professional agriculturalists.	4.51	VI	4.02	I	4.42	I	4.32	I	6
12. Securing evidence that the teaching faculty is strongly committed to exerting a special effort to provide effective training for professional agriculturalists.	4.58	VI	4.11	I	4.68	VI	4.46	I	3
13. Securing evidence that the teaching faculty is encouraged to become aware of and develop an interest in solving important problems encountered in agricultural development.	4.46	I	4.19	I	4.47	I	4.37	I	4
14. Securing evidence that institutional administrators are willing to place emphasis upon further development and implementation of indigenous agricultural research services.	4.31	I	4.02	I	4.21	I	4.18	I	9
15. Securing evidence that teaching faculty are willing to place emphasis upon the further development and implementation of indigenous agricultural research services.	4.60	VI	4.38	I	4.66	VI	4.55	VI	2
16. Securing evidence that institutional administrators attempt to give high priority to the allocation of resources to program preparing professional agriculturalists.	4.24	I	4.11	I	4.33	I	4.23	I	8

*Rating Symbols

V I = Very Important; I = Important; U = Undecided; L I = Little Importance; N I = No Importance

TABLE XXIV

JUDGMENTS OF SENIOR STUDENTS AS TO RELATIVE IMPORTANCE OF SELECTED FACTORS, ITEMS AND PROCEDURES

Statements	KING SAUD UNIVERSITY Senior Students; N=40		KING FAISAL UNIVERSITY Senior Students; N=14		THE AGRICULTURAL INSTITUTE Senior Students; N=37		ALL SCHOOLS Combined Groups; 40+14+37=91		
	Degree of Importance		Degree of Importance		Degree of Importance		Degree of Importance		
	Mean	Rating*	Mean	Rating*	Mean	Rating*	Mean	Rating*	Rank
1. Assessment of performance of graduates on the job.	4.30	I	4.42	I	4.29	I	4.34	I	4
2. Securing involvement of Branch and Regional Directors through seminars and workshops.	4.10	I	4.18	I	4.37	I	4.22	I	9
3. Securing involvement of college of agriculture and the agricultural institute students in determining their needs, interests and aspirations.	4.33	I	4.57	VI	4.51	VI	4.47	I	2
4. Assessment of the extent of cooperative efforts and involvement between administration and teaching faculty of the university and other agricultural agencies and organizations.	4.07	I	4.71	VI	4.13	I	4.30	I	5
5. Securing involvement of graduates now serving in agricultural positions.	4.12	I	4.28	I	4.29	I	4.23	I	8
6. Securing involvement of non-Saudies now serving in agricultural positions.	3.38	U	3.92	I	3.21	U	3.50	I	16
7. Securing involvement of selected farmers through agricultural offices.	3.62	I	3.78	I	4.10	I	3.83	I	15
8. Securing involvement of consultants from other countries.	3.74	I	4.14	I	3.69	I	3.86	I	14
9. Giving due study and consideration to culture and tradition as these have affected teaching, learning and adoption of agricultural practices.	3.95	I	4.42	I	4.37	I	4.25	I	7
10. Securing copies of and studying reference to job descriptions and/or official regulations which affect the work of agriculturalists.	3.59	I	4.23	I	4.29	I	4.04	I	12
11. Securing evidence that institutional administrators are committed to a special effort to provide effective training for professional agriculturalists.	4.37	I	4.50	VI	4.35	I	4.40	I	3
12. Securing evidence that the teaching faculty is strongly committed to exerting a special effort to provide effective training for professional agriculturalists.	4.66	VI	4.64	VI	4.56	VI	4.62	VI	1
13. Securing evidence that the teaching faculty is encouraged to become aware of and develop an interest in solving important problems encountered in agricultural development.	4.10	I	4.07	I	4.40	I	4.19	I	10
14. Securing evidence that institutional administrators are willing to place emphasis upon further development and implementation of indigenous agricultural research services.	4.27	I	4.38	I	4.23	I	4.29	I	6
15. Securing evidence that teaching faculty are willing to place emphasis upon the further development and implementation of indigenous agricultural research services.	4.32	I	4.07	I	4.02	I	4.14	I	11
16. Securing evidence that institutional administrators attempt to give high priority to the allocation of resources to program preparing professional agriculturalists.	3.83	I	3.76	I	4.37	I	3.99	I	13

*Rating Symbols

V I = Very Important; I = Important; U = Undecided; L I = Little Importance; N I = No Importance

exerting a special effort to provide effective training for professional agriculturalists", with the combined group mean of 4.62 and a rating of "very important". The second place rating was given to "securing involvement of College of Agriculture and the Agricultural Institute students in determining their needs, interests and aspirations."

The lowest ranking of sixteenth, but with a mean of 3.50, was given by the combined student groups to the statement "securing involvement of non-Saudies now serving in agricultural positions". This reflects the same judgment received from the administrators and directors.

However, all statements in this area received a judgment of either "important" or "very important" by all senior students from the school or individual group except statement 6 which received a rating of "important" by senior students from King Faisal University and a rating of "undecided" by senior students from King Saud University and the Agricultural Institute.

Aggrement with Selected Goals and Objective Statements Concerned with Curriculum

With regard to this area, judgments were given by administrators and directors and are presented in Table XXV. These data showed that the first statement which received the highest rating of agreement among administrators from all three agricultural schools as a combined group to be "developing a feedback mechanism for bringing field problems to the attention of agricultural researchers". With a mean of 4.60, this ranked first among the preferred goals while the directors rated it fourth with a level of agreement of "agree".

TABLE XXV

JUDGMENTS OF ADMINISTRATORS AND DIRECTORS AS TO EXTENT OF AGREEMENT WITH SELECTED GOALS AND OBJECTIVES STATEMENTS

Statements	KING SAUD UNIVERSITY Administrators; N=9 Degree of Agreement		KING FAISAL UNIVERSITY Administrators; N=11 Degree of Agreement		THE AGRICULTURAL INSTITUTE Administrators; N=2 Degree of Agreement		ALL SCHOOLS Combined Groups; N=22 Degree of Agreement		Rank	MINISTRY OF AGRICULTURE AND WATER REGIONAL BRANCHES AND AGR. BANK MAIN BRANCHES Directors; N=29 Degree of Agreement		Rank
	Mean	Rating*	Mean	Rating*	Mean	Rating*	Mean	Rating*		Mean	Rating*	
1. Provide the dynamic pool or technological information needed to support strong programs for agricultural education and extension.	4.66	SA	4.72	SA	4.0	A	4.46	A	3	4.55	SA	2
2. Identify agricultural problems which require priority attention on a regional basis.	4.55	SA	4.27	A	4.0	A	4.27	A	5	4.67	SA	1
3. Develop regional centers of excellence in various production fields at appropriate college or university.	3.66	A	4.00	A	4.0	A	3.88	A	7	4.17	A	7
4. Develop a feedback mechanism for bringing field problems to the attention of agricultural researchers.	4.66	SA	4.63	SA	4.5	SA	4.60	S A	1	4.48	A	4
5. Identify new styles of operation in teaching which should be experimented within the local environment.	4.55	SA	4.54	SA	3.5	A	4.20	A	6	4.41	A	6
6. Identify new styles of operation in extension which should be experimented within the local environment.	4.44	A	4.45	A	4.0	A	4.29	A	4	4.48	A	5
7. Among graduates now serving as professionals attempt to develop a sense of team spirit and leadership.	4.77	SA	4.80	SA	4.5	SA	4.48	A	2	4.55	SA	3

*Rating Symbols

S A = Strongly Agree
A = Agree
U = Undecided
D = Disagree
S D = Strongly Disagree

Directors gave a "strong agreement" response to the statement "Identification of agricultural problems which require priority attention on a regional basis", ranking it first, while administrators as a combined group ranked this statement fifth, with a mean of 4.27 which fell in the "agree" category.

Another statement which received different agreement levels between directors and administrators was "provides dynamic pool for technological information needed to support strong program for agricultural education and extension", whereas administrators as a combined group ranked it third with an "agree" response, directors ranked it second with a "strongly agree" response.

Little difference is to be observed between responses of the two groups with regard to the goal statement "developing a sense of team spirit and leadership among graduates now serving on the job", which was ranked second by the administrators combined group and third by directors.

Administrators and directors as combined groups also provided the same level of agreement with regard to the statement "to develop regional centers of excellence in various production fields at appropriate college or university" with both ranking it the lowest (seventh).

However, all selected goals and/or objectives listed in this area did receive a level of agreement of either "agree" or "strongly agree", this by administrators as groups and by directors.

Responses of instructors from the three agricultural schools regarding selected goals and/or objectives to be considered in designing and implementing the agricultural curriculum are to be found in Table XXVI. Instructors from the three schools as a combined group gave the highest

TABLE XXVI

JUDGMENTS OF INSTRUCTORS AS TO EXTENT OF AGREEMENT WITH SELECTED GOALS AND OBJECTIVES STATEMENTS

Statements	KING SAUD UNIVERSITY Instructors; N=41		KING FAISAL UNIVERSITY Instructors; N=36		THE AGRICULTURAL INSTITUTE Instructors; N=19		ALL SCHOOLS Combined Groups; 41+36+19=96		
	Degree of Agreement		Degree of Agreement		Degree of Agreement		Degree of Agreement		Rank
	Mean	Rating*	Mean	Rating*	Mean	Rating*	Mean	Rating*	
1. Provide the dynamic pool or technological information needed to support strong programs for agricultural education and extension.	4.13	A	4.55	SA	4.70	SA	4.52	SA	5
2. Identify agricultural problems which require priority attention on a regional basis.	4.60	SA	4.52	SA	4.50	SA	4.54	SA	4
3. Develop regional centers of excellence in various production fields at appropriate college or university.	3.82	A	4.27	A	4.23	A	4.11	A	7
4. Develop a feedback mechanism for bringing field problems to the attention of agricultural researchers.	4.65	SA	4.62	SA	4.66	SA	4.65	SA	1
5. Identify new styles of operation in teaching which should be experimented within the local environment.	4.58	SA	4.33	A	4.84	SA	4.56	SA	3
6. Identify new styles of operation in extension which should be experimented within the local environment.	4.41	A	4.41	A	4.50	SA	4.44	A	6
7. Among graduates now serving as professionals attempt to develop a sense of team spirit and leadership.	4.56	SA	4.58	SA	4.78	SA	4.64	SA	2

*Rating Symbols

S A = Strongly Agree
A = Agree
U = Undecided
D = Disagree
S D = Strongly Disagree

level of agreement "strong agree", both as individual and as combined groups to the statement "develop a feedback mechanism for bringing field problems to the attention of agricultural researchers". The combined instructors group mean of 4.65 was the highest mean given statement in this area with an only slightly lower mean given by the combined instructor groups was "among the graduates now serving as professionals attempt to develop a sense of team spirit and leadership".

Instructors seemed to be in agreement with administrators and directors with regard to the statement "to develop regional centers of excellence in various production fields at the appropriate College or University". While they agreed, the relatively lower mean gave a ranking among the seven items as seventh.

Generally, all goals and/or objectives have received a level of agreement of either "agree" or "strongly agree" by all groups of instructors.

The extent of agreement with selected goals and/or objectives as determined by responses from senior students at the three agricultural schools is presented in Table XXVII. These data reflect the fact that senior students, as a combined group, gave the highest level of agreement, "strongly agree", to the statement "identify new styles of operation in teaching which should be experimented within the local environment", with a mean of 4.50 and students ranked this statement first.

A second statement which received a relatively high level of agreement from senior students was "developing a sense of team spirit and leadership among graduates now serving as professionals", with a mean of 4.42 which reflects "agree" level.

TABLE XXVII

JUDGMENTS OF SENIOR STUDENTS AS TO EXTENT OF AGREEMENT WITH SELECTED GOALS AND OBJECTIVES STATEMENTS

Statements	KING SAUD UNIVERSITY Senior Students; N=40		KING FAISAL UNIVERSITY Senior Students; N=14		THE AGRICULTURAL INSTITUTE Senior Students; N=37		ALL SCHOOLS Combined Groups; 40+14+37=91		
	Degree of Agreement		Degree of Agreement		Degree of Agreement		Degree of Agreement		
	Mean	Rating*	Mean	Rating*	Mean	Rating *	Mean	Rating*	Rank
1. Provide the dynamic pool or technological information needed to support strong programs for agricultural education and extension.	4.17	A	4.35	A	4.24	A	4.25	A	5
2. Identify agricultural problems which require priority attention on a regional basis.	4.35	A	4.35	A	4.18	A	4.29	A	4
3. Develop regional centers of excellence in various production fields at appropriate college or university.	3.69	A	4.05	A	4.29	A	4.01	A	7
4. Develop a feedback mechanism for bringing field problems to the attention of agricultural researchers.	4.46	A	4.30	A	4.19	A	4.32	A	3
5. Identify new styles of operation in teaching which should be experimented within the local environment.	4.45	A	4.71	SA	4.35	A	4.50	SA	1
6. Identify new styles of operation in extension which should be experimented within the local environment.	4.22	A	4.28	A	4.00	A	4.17	A	6
7. Among graduates now serving as professionals attempt to develop a sense of team spirit and leadership.	4.45	A	4.38	A	4.43	A	4.42	A	2

*Rating Symbols

S A = Strongly Agree
A = Agree
U = Undecided
D = Disagree
S D = Strongly Disagree

As was true with administrators, directors, and instructors, the suggestion "developing regional centers of excellence in various production fields at appropriate College or University" while receiving a response level of "agree" was ranked seventh.

Senior students responses were such that all selected goals and/or objectives in this area received a level of agreement of "agree" by those attending each different school except that statement 6 did receive a rating of "strongly agree" by senior students from King Faisal University.

Selected Statements Regarding Content of Agricultural Courses

Data presented in Table XXVIII show judgments given by administrators from the three agricultural schools and directors of the Ministry of Agriculture and Water Regional Branches and the Agricultural Bank Main Branches with regard to certain selected statements regarding course content. Administrators as a combined group thought that of major importance was "facilities and audiovisuals to help students understand subject easily"; this rating level of agreement was "agree" with the higher mean of 4.42. But directors differed slightly in this agreement level ranking it the sixth, but with the same level of agreement "agree". The opposite happened when comparing responses of the two groups to the statement "more concentration upon laboratories and/or work in the field rather than theory (lectures)".

Relatively little difference was given to "summer internship" in terms of emphasis. Rankings of second and third, respectively was

TABLE XXVIII

JUDGMENTS OF ADMINISTRATORS AND DIRECTORS AS TO SELECTED STATEMENTS REGARDING AGRICULTURAL COURSES CONTENT

Statements	KING SAUD UNIVERSITY Administrators; N=9		KING FAISAL UNIVERSITY Administrators; N-11		THE AGRICULTURAL INSTITUTE Administrators; N=2		ALL SCHOOLS Combined Groups; N=22			MINISTRY OF AGRICULTURE AND WATER REGIONAL BRANCHES AND AGR. BANK MAIN BRANCHES Directors; N=29		
	Degree of Agreement		Degree of Agreement		Degree of Agreement		Degree of Agreement			Degree of Agreement		
	Mean	Rating*	Mean	Rating*	Mean	Rating*	Mean	Rating*	Rank	Mean	Rating*	Rank
1. Agricultural courses are very related.	4.22	A	4.36	A	4.0	A	4.19	A	4	3.0	U	10
2. Agricultural courses are not enough to help a student in his major field.	2.33	D	2.81	U	4.0	A	3.05	U	10	3.51	A	9
3. Little relationship between subjects being taught and field practices.	2.44	D	3.18	U	4.0	A	3.20	U	8	3.86	A	8
4. Strong relationship between academic practices and field practices.	3.22	U	3.40	U	4.5	SA	3.70	A	7	2.24	U	12
5. Need more subject matter content added.	3.11	U	3.45	U	3.0	U	3.18	U	9	3.89	A	7
6. Courses and their contents need to be modified to fit the agricultural situation and field activities.	3.66	A	3.81	A	4.0	A	3.99	A	5	4.24	A	4
7. Need more prerequisites to help students understand the material.	3.11	U	3.00	U	3.0	U	3.03	U	11	4.20	A	5
8. Need more facilities and audiovisual material to help student understand subjects easily.	4.22	A	4.54	SA	4.5	SA	4.42	A	1	4.17	A	6
9. More concentration upon laboratories and/or work in the field rather than theory (lectures).	2.77	U	4.27	A	4.5	SA	3.95	A	6	4.48	A	1
10. Summer training is important and needs to be emphasized.	4.22	A	4.36	A	4.5	SA	4.36	A	3	4.37	A	2
11. I earned a lot of knowledge and skills in my area (only for students).	0.00	--	0.00	--	0.0	--	0.00	--	-	0.00	--	-
12. In my judgment nothing needs to be added to the current courses in my specialized area.	2.80	U	2.60	U	3.00	U	2.70	U	12	2.44	U	11
13. Evaluation needs to be conducted annually to help in developing subject matter.	4.60	SA	4.00	A	4.5	SA	4.36	A	2	..31	A	3

*Rating Symbols

S A = Strongly Agree
A = Agree
U = Undecided
D = Disagree
S D = Strongly Disagree

given by administrators and directors with regard to the statement "evaluation to be conducted annually to help in developing subject matter".

The statement concerning "nothing needs to be added to the present courses in their different specialization area" was rated by administrators as "undecided" as a combined group ranking twelfth and by same level of judgment as "undecided" by directors, but with a rank of eleventh.

The more obvious and recognized difference between administrators as a combined group and directors is to be found concerning "the relationship between academic practices and field practices", where administrators "agreed" with statement, directors responded as "undecided".

Generally, all statements in this area were given either "agree" or "undecided" judgments by administrators from King Saud University except statement 13, which yielded responses of "strongly agree". Administrators from this school did agree with statements 2 and 3. Administrators from King Faisal University were "undecided" about statement 2 and 3 and differed with regard to statement 8 which received a response of "strongly agree".

Administrators from the Agricultural Institute either "agree" or "strongly agree" with most statements in this area except with statements 5, 7, and 12; they were "undecided" about these statements.

Directors agreed with most of the statements in this area except statements 1, 4, and 12 which received a rating of "undecided".

Data with regard to responses given by instructors from the three Agricultural schools are listed in Table XXIX. Instructors as a

TABLE XXIX

JUDGMENTS OF INSTRUCTORS AS TO SELECTED STATEMENTS REGARDING AGRICULTURAL COURSES CONTENT

Statements	KING SAUD UNIVERSITY Instructors; N=41		KING FAISAL UNIVERSITY Instructors; N=36		THE AGRICULTURAL INSTITUTE Instructors; N=19		ALL SCHOOLS Combined Groups; 41+36+19=96		
	Degree of Agreement		Degree of Agreement		Degree of Agreement		Degree of Agreement		
	Mean	Rating*	Mean	Rating*	Mean	Rating*	Mean	Rating*	Rank
1. Agricultural courses are very related.	3.80	A	4.15	A	4.27	A	4.07	A	4
2. Agricultural courses are not enough to help a student in his major field.	3.12	U	3.24	U	3.33	U	3.23	U	9
3. Little relationship between subjects being taught and field practices.	3.35	U	3.15	U	3.10	U	3.20	U	10
4. Strong relationship between academic practices and field practices.	2.85	U	2.93	U	3.37	U	3.05	U	11
5. Need more subject matter content added.	3.89	A	3.65	A	3.31	U	3.62	A	8
6. Courses and their contents need to be modified to fit the agricultural situation and field activities.	3.81	A	4.14	A	4.21	A	4.05	A	5
7. Need more prerequisites to help students understand the material.	3.70	A	4.06	A	3.73	A	3.83	A	7
8. Need more facilities and audiovisual material to help student understand subjects easily.	4.46	A	4.28	A	4.57	SA	4.44	A	2
9. More concentration upon laboratories and/or work in the field rather than theory (lectures).	3.67	A	3.65	A	4.57	SA	3.97	A	6
10. Summer training is important and needs to be emphasized.	4.42	A	4.28	A	5.00	SA	4.57	SA	1
11. I earned a lot of knowledge and skills in my area (only for students).	0.00	--	0.00	--	0.00	--	0.00	--	-
12. In my judgment nothing needs to be added to the current courses in my specialized area.	2.78	U	2.32	U	3.50	A	2.86	U	12
13. Evaluation needs to be conducted annually to help in developing subject matter.	4.33	A	3.92	A	4.25	A	4.16	A	3

*Rating Symbols

S A = Strongly Agree
A = Agree
U = Undecided
D = Disagree
S D = Strongly Disagree

combined group gave a response of "strongly agree" in terms of "summer training". The support of instructors for the summer training was evident by the mean of 4.57 and ranking of first among the statements in this area. However, instructors from the Agricultural Institute responded with "strongly agree" to this statement, which emphasize summer training, and contrasted with instructors from King Saud University and King Faisal University who each responded with the level "agree". Instructors in the combined school grouping provided a high mean of 4.44 and ranked second the statement "need more facilities and audiovisual to help students understand the subject matter".

Lower ratings were given by instructors to the statement "nothing needs to be added to the current courses in their specialization areas", with instructors from both King Saud University and King Faisal University responding "undecided" while instructor responses from the Agricultural Institute gave a level of "agree".

Generally speaking, all the statements in this area were given a judgment of either "agree" or "undecided" by instructors from King Saud University and King Faisal University. But instructors from the Agricultural Institute gave a judgment of "agree" or "undecided" to most of the statements except statements 8, 9, and 10 which received a level of judgment of "strongly agree".

Senior student responses as presented in Table XXX show an "agreement" with the statement "little relationhip between courses content being taught and field practices" except that students at the Agricultural Institute were "undecided" about this matter. Students were also in "strong agreement" at all three schools with the statement

TABLE XXX

JUDGMENTS OF SENIOR STUDENTS AS TO SELECTED STATEMENTS REGARDING AGRICULTURAL COURSES CONTENT

Statements	KING SAUD UNIVERSITY Senior Students; N=40		KING FAISAL UNIVERSITY Senior Students; N=14		THE AGRICULTURAL INSTITUTE Senior Students; N=37		ALL SCHOOLS Combined Groups; 40+14+37=91		
	Degree of Agreement		Degree of Agreement		Degree of Agreement		Degree of Agreement		
	Mean	Rating*	Mean	Rating*	Mean	Rating*	Mean	Rating*	Rank
1. Agricultural courses are very related.	2.84	U	3.64	A	3.89	A	3.45	U	11
2. Agricultural courses are not enough to help a student in his major field.	3.75	A	3.35	U	3.45	U	3.52	A	10
3. Little relationship between subjects being taught and field practices.	4.07	A	3.85	A	3.44	U	3.79	A	8
4. Strong relationship between academic practices and field practices.	2.51	U	2.71	U	3.48	U	2.90	U	12
5. Need more subject matter content added.	3.92	A	3.78	A	3.94	A	3.88	A	7
6. Courses and their contents need to be modified to fit the agricultural situation and field activities.	4.20	A	4.07	A	4.32	A	4.19	A	5
7. Need more prerequisites to help students understand the material.	3.67	A	3.92	A	4.27	A	3.95	A	6
8. Need more facilities and audiovisual material to help student understand subjects easily.	4.05	A	4.33	A	4.25	A	4.21	A	4
9. More concentration upon laboratories and/or work in the field rather than theory (lectures).	4.58	SA	4.71	SA	4.51	SA	4.60	SA	1
10. Summer training is important and needs to be emphasized.	4.42	A	4.61	SA	4.19	A	4.41	A	2
11. I earned a lot of knowledge and skills in my area (only for students).	3.63	A	3.85	A	3.75	A	3.74	A	9
12. In my judgment nothing needs to be added to the current courses in my specialized area.	2.21	D	2.92	U	3.45	U	2.86	U	13
13. Evaluation needs to be conducted annually to help in developing subject matter.	4.33	A	4.42	A	4.29	A	4.35	A	3

*Rating Symbols

S A = Strongly Agree
A = Agree
U = Undecided
D = Disagree
S D = Strongly Disagree

"more concentration upon laboratories and/or work in the field giving a rank of first with a mean of 4.60. Further, students were favorable with regard to emphasis needed upon summer training.

Similar to instructors and directors judgments, the statement "nothing needs to be added to the current courses in their specialization area", was given the lowest level with an "undecided" responses by the combined group of students and with "disagreement" by senior students from King Saud University and "undecided" by senior students from King Faisal University and the Agricultural Institute.

CHAPTER V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

In presenting the summary, conclusion and recommendations, it is deemed appropriate to again review the specific objectives of the study, which were:

1. To determine the adequacies of agricultural curriculum and training of the colleges of College of Agriculture at King Faisal University and King Saud University, and the Agricultural Institute in Buraydah in Saudi Arabia as perceived by:

    a. Administrators at Colleges of Agriculture and the Agricultural Institute

    b. Instructors at the Colleges and the Institute

    c. Senior students enrolled at these institutions

    d. Directors who supervise on-the-job performance of the graduates, their employees

2. To determine the extent of possible agreement among the four groups regarding the effectiveness of curriculum and training programs.

3. To recommend changes or revisions which may make the curriculum and training program more effective in meeting the needs for preparing agricultural specialists based upon findings in the literature review and analyses of the data.

By far the most important objectives of this study is to recommend changes or revisions which may make the curriculum and training program more effective in meeting the needs for preparing agricultural specialists based upon findings in the review of literature and analysis of the data from the four respective groups indicated above.

Summary of Findings

Findings from Review of Literature

Findings from review of literature were seen to include the following statements and basic concepts regarding curriculum development and design:

1. A recommendation by Al-Obaid (3) to remodel all levels of curriculum.

2. Other than the study of Al-Obaid, no further study has been attempted in Saudi Arabia specially regarding agricultural curricula.

3. The development and design of any type of curriculum should consider the following question as mentioned by Tyler (29):

    a. What should be the educational objectives of curriculum?

    b. What learning experience should be developed to enable students to achieve the objective?

    c. How should the learning experience be organized to be more effective?

    d. How do we evaluate the effectiveness of curriculum?

4. The structure of curriculum and its design must be developed with great sensitivity to internal and environmental needs.

5. Of primary importance in curriculum development, the needs and interests of student, contemporary life outside the school and the careful selection of subject matter, specialists must be considered items of major importance.

6. Agricultural curriculum should be constantly modified in order to keep up with the needs and changes of local agricultural situation.

7. The importance of follow-up studies as they lead to valid change or revision in curriculum is also to be recognized.

8. The placement of graduates can be used as an item to help measure effectiveness or success of curriculum.

Findings from Analyses of Data

A review and summary of pertinent findings shown in Tables IV through XXX is to be found in Tables XXXI through XXXIX. Briefly, these data show items pertaining to the area, "Agricultural Economics, Rural Sociology, and Agricultural Extension", as judgments of combined groups in Table XXXI show that, (a) the most emphasis in terms of importance was given to the item "Saudi Agricultural Economics" with ranking agreement by directors; (b) "Extension Teaching and Demonstration" also was given a "very important" rating by the combined institutional grouping to which directors agreed; (c) "Using Computer in Agriculture" was given the lowest rating and ranking by the combined institutional grouping and by directors; (d) all items in the area of "Agricultural Economics, Rural Sociology and Agricultural Extension", were given either "important" or "very important" ratings by combined institutional grouping and by directors, and (e) with regard to student adequacy, data show that all items in this area rated either below the midpoint of 3.00 or only slightly higher by the combined institutional grouping. As for directors, only one item "Extension Teaching and Demonstration" was given as high as a midpoint score. All were much lower than ratings given by the combined institutional grouping.

A summary of findings regarding respondents ratings of items in the area "Plant Production and Plant Protection" are presented in Table XXXII. This shows, (a) more emphasis in terms of importance was given to "field crops" and "vegetables" than was given other items. Rating

TABLE XXXI

JUDGMENTS OF COMBINED GROUPS AS TO RELATIVE IMPORTANCE AND EXTENT OF STUDENT ADEQUACY IN SELECTED ASPECTS OF AGRICULTURAL ECONOMIC, RURAL SOCIOLOGY, AND AGRICULTURAL EXTENSION

ITEMS	ADMINISTRATORS Combined Group; N=22					INSTRUCTORS Combined Group; N=96					SENIOR STUDENTS Combined Group; N=91					ALL INSTITUTIONAL Respondents Combined Group N = 22+96+91=209					DIRECTORS Combined Group; N=29				
	Importance			Student Adequacy		Importance			Student Adequacy		Importance			Student Adequacy		Importance			Student Adequacy		Importance			Student Adequacy	
	Mean	Rating	Rank	Mean	Rank	Mean	Rating	Rank	Mean	Rank	Mean	Rating	Rank	Mean	Rank	Mean	Rating	Rank	Mean	Rank	Mean	Rating	Rank	Mean	Rank
1. Rural social development and leadership.	3.55	V I	6	3.36	3	3.80	V I	4	3.34	4	3.55	V I	5	3.11	4	3.63	V I	4	3.36	1	3.48	I	6	2.86	3
2. Saudi agricultural economics.	3.77	V I	3	3.00	4	4.00	V I	1	3.55	1	3.76	V I	1	3.25	2	3.84	V I	1	3.26	3	3.75	V I	1	2.96	2
3. Marketing and agricultural accounting.	3.81	V I	2	3.40	2	3.60	V I	5	3.17	5	3.43	I	6	3.16	3	3.61	V I	5	3.24	4	3.51	V I	5	2.78	4
4. Farm management.	3.82	V I	1	3.50	1	3.99	V I	2	3.36	2	3.65	V I	3	2.99	6	3.82	V I	2	3.28	2	3.64	V I	4	2.72	5
5. Agricultural cooperatives.	3.34	I	8	2.30	8	3.17	I	8	2.85	8	3.19	I	8	2.76	8	3.23	I	8	2.63	8	3.41	I	8	2.66	7
6. Statistic and research methods.	3.41	I	7	2.37	7	3.49	I	7	2.94	7	3.35	I	7	2.88	7	3.41	I	7	2.73	7	3.46	I	7	2.66	6
7. Using computer in agriculture.	2.83	I	9	1.82	9	2.19	I	9	2.22	9	3.00	I	9	2.29	9	2.67	I	9	2.11	9	2.89	I	9	1.12	9
8. Agricultural Extension planning.	3.58	V I	5	2.61	6	3.45	V I	6	3.02	6	3.59	V I	4	3.04	5	3.54	V I	6	2.89	6	3.72	V I	3	2.57	8
9. Extension teaching and demonstration.	3.68	V I	4	2.88	5	3.81	V I	3	3.36	3	3.71	V I	2	3.29	1	3.73	V I	3	3.17	5	3.75	V I	2	3.06	1

Note: Symbols used in Rating:

V I = Very Important
I = Important

TABLE XXXII

JUDGMENTS OF COMBINED GROUPS AS TO RELATIVE IMPORTANCE AND EXTENT OF STUDENT ADEQUACY IN SELECTED ASPECTS OF PLANT PRODUCTION AND PLANT PROTECTION

Items	ADMINISTRATORS Combined Group; N=22					INSTRUCTORS Combined Group; N=96					SENIOR STUDENTS Combined Group; N=91					ALL INSTITUTIONAL Respondents Combined Group N = 22+96+91=209					DIRECTORS Combined Group; N=29				
	Importance			Student Adequacy		Importance			Student Adequacy		Importance			Student Adequacy		Importance			Student Adequacy		Importance			Student Adequacy	
	Mean	Rating	Rank	Mean	Rank	Mean	Rating	Rank	Mean	Rank	Mean	Rating	Rank	Mean	Rank	Mean	Rating	Rank	Mean	Rank	Mean	Rating	Rank	Mean	Rank
1. Nurseries and floriculture.	3.84	V I	9	3.83	7	3.87	V I	6	3.62	6	3.29	I	12	3.16	5	3.66	V I	8	3.53	6	3.44	I	9	2.67	11
2. Plant nutrition.	4.07	V I	6	3.72	8	3.81	V I	7	3.46	7	3.74	V I	7	2.99	9	3.87	V I	5	3.39	8	3.58	V I	8	2.86	7
3. Plant physiology.	3.98	V I	7	3.94	3	3.51	V I	12	3.42	9	3.29	I	13	3.89	12	3.59	V I	11	3.75	2	3.27	I	12	2.64	12
4. Plant pathology. (Bacterial & fungi diseases)	4.31	V I	3	3.86	6	4.16	V I	5	3.96	2	4.24	V I	1	3.35	3	4.23	V I	3	3.72	3	4.03	V I	3	3.13	5
5. Field crops.	4.38	V I	2	4.05	1	4.39	V I	1	3.85	3	3.95	V I	4	3.43	2	4.24	V I	2	3.77	1	4.00	V I	5	3.53	1
6. Vegetables.	4.46	V I	1	4.02	2	4.33	V I	2	3.98	1	3.99	V I	3	3.17	4	4.26	V I	1	3.72	4	4.06	V I	1	3.48	2
7. Fruit production.	4.31	V I	4	3.91	5	4.21	V I	3	3.72	4	3.87	V I	5	3.12	6	4.13	V I	4	3.58	5	4.03	V I	4	3.37	3
8. Plant breeding & genetics.	3.85	V I	8	3.61	9	3.64	V I	9	3.44	8	3.50	V I	9	2.83	13	3.66	V I	9	3.29	9	3.34	I	11	2.82	8
9. Insect physiology.	3.07	I	15	3.76	16	3.06	I	14	3.04	12	3.04	I	16	2.50	15	3.05	I	15	3.10	13	2.96	I	16	2.53	14
10. Agricultural microbiology.	3.22	I	14	3.43	12	3.32	I	13	3.04	14	3.26	I	14	2.72	14	3.26	I	13	3.06	14	3.17	I	14	2.62	13
11. Insects and pests control.	4.09	V I	5	3.92	4	4.19	V I	4	3.68	5	3.19	I	2	3.48	1	3.82	V I	6	3.53	7	4.06	V I	2	3.22	4
12. Forage and forestry.	3.53	V I	13	3.03	15	3.52	V I	11	3.04	13	3.22	I	11	2.90	11	3.42	I	12	2.99	15	3.37	I	10	2.89	6
13. Useful insects. (Example: Bees)	3.75	V I	10	3.48	11	3.72	V I	8	3.39	10	3.76	V I	6	2.97	10	3.74	V I	7	3.28	10	3.26	V I	7	2.50	15
14. Toxicology.	2.95	I	16	3.16	14	2.77	I	16	2.51	16	3.22	I	15	2.36	16	2.98	I	16	2.67	16	3.24	I	13	2.34	16
15. Nematology.	2.57	I	12	3.53	10	3.00	I	15	3.00	15	3.72	V I	8	2.99	8	3.09	I	14	3.17	12	3.82	V I	6	2.68	10
16. Landscape.	3.67	V I	11	3.21	13	3.62	V I	10	3.34	11	3.54	V I	10	3.06	7	3.61	V I	10	3.20	11	3.14	I	15	2.80	9

Note: Symbols used in Rating

V I = Very Important
I = Important

of student adequacy showed very similar judgments with directors responses noticeably lower; (b) the item of "Toxicology" received lower ratings of importance compared to other items and was ranked sixteenth by the combined institutional grouping and fourteenth by directors. Also in terms of student adequacy was ranked among the lower items as fifteenth by combined groups and sixteenth by directors; (c) all items included in this area received either "important" or "very important" rating levels with in general only a slight difference in terms of mean scores.

Summary of responses made in the area of "Agricultural Mechanics and Soil Science" can be seen in Table XXXIII; (a) the two items "Irrigation and Drainage" and "Soil Fertilization and Fertilizers" received some of the highest mean scores of the entire study and ranked first and second respectively both by the combined institutional grouping and by directors. With regard to student adequacy in these two items, respondents also gave some of the highest ratings for two items combined group and directors; (b) the item "Soil Chemistry" considered to be of lesser importance than some other items ranking tenth by combined institutional grouping and the same by directors; and (c) "Food Processing Engineering" was one item which received the lowest rating of importance by groups. Student adequacy for this item was judged to be somewhat lower than that for most other items.

In general, all items in the area of "Agricultural Mechanics and Soil Science" were judged as "very important" or "important", thereby showing this area to be considered as one of the most important in agricultural curriculum.

A summary of responses pertaining to the area of "Animal Production and Food Technology" are presented in Table XXXIV. Respondents are seen

TABLE XXXIII

JUDGMENTS OF COMBINED GROUPS AS TO RELATIVE IMPORTANCE AND EXTENT OF STUDENT ADEQUACY IN SELECTED ASPECTS OF AGRICULTURAL MECHANICS AND SOIL SCIENCE

ITEMS	ADMINISTRATORS Combined Group; N=22					INSTRUCTORS Combined Group; N=96					SENIOR STUDENTS Combined Group; N=91					ALL INSTITUTIONAL Respondents Combined Group N = 22+96+91=209					DIRECTORS Combined Group; N=29				
	Importance			Student Adequacy		Importance			Student Adequacy		Importance			Student Adequacy		Importance			Student Adequacy		Importance			Student Adequacy	
	Mean	Rating	Rank	Mean	Rank	Mean	Rating	Rank	Mean	Rank	Mean	Rating	Rank	Mean	Rank	Mean	Rating	Rank	Mean	Rank	Mean	Rating	Rank	Mean	Rank
1. Irrigation and drainage.	4.39	V I	1	3.83	1	4.34	V I	1	3.62	1	4.19	V I	1	3.18	1	4.30	V I	1	3.54	1	3.93	V I	2	2.89	2
2. Irrigation engineering.	3.95	V I	5	3.18	6	3.55	V I	7	3.08	6	3.84	V I	4	2.87	4	3.78	V I	5	3.04	4	3.44	I	7	2.37	7
3. Surveying.	3.32	I	11	3.20	4	3.44	I	8	3.23	4	3.46	I	9	2.69	9	3.40	I	11	3.04	5	3.13	I	11	3.68	4
4. Food processing engineering.	2.93	I	12	2.07	12	3.22	I	12	2.78	11	3.44	I	10	2.64	11	3.19	I	12	2.49	12	2.93	I	12	2.11	11
5. Agricultural machines and workshop.	4.26	V I	2	3.22	3	4.11	V I	2	3.61	2	3.92	V I	3	2.98	3	4.10	V I	2	3.27	3	3.93	V I	3	2.75	3
6. Machine maintenance and safety.	4.01	V I	4	3.08	8	3.69	V I	4	2.96	8	3.64	V I	7	2.81	6	3.78	V I	4	2.95	7	3.64	V I	6	2.22	10
7. Soil morphology & erosion.	3.64	V I	8	3.12	7	3.44	I	9	3.00	7	3.43	I	11	2.71	8	3.50	V I	9	2.94	8	3.27	I	9	2.35	8
8. Soil chemistry.	3.61	V I	10	3.19	5	3.30	I	11	2.94	9	3.35	I	12	2.51	12	3.42	I	10	2.88	9	3.17	I	10	2.03	12
9. Soil fertilization and fertilizers.	4.27	V I	3	3.79	2	4.06	V I	3	3.54	3	3.93	V I	2	3.14	2	4.08	V I	3	3.49	2	4.07	V I	1	2.96	1
10. Soil conservation.	3.64	V I	9	2.86	11	3.41	I	10	2.75	12	3.56	V I	8	2.68	10	3.53	V I	8	2.76	11	3.42	I	8	2.25	9
11. Soil-water relationship.	3.70	V I	6	3.08	9	3.69	V I	5	3.19	5	3.68	V I	6	2.81	5	3.69	V I	6	3.02	6	3.92	V I	4	2.66	5
12. Maintaining stabilization planting.	3.66	V I	7	2.96	10	3.59	V I	6	2.89	10	3.78	V I	5	2.74	7	3.67	V I	7	2.86	10	3.70	V I	5	2.62	6

Note: Symbols used in Rating

V I = Very Important
I = Important

TABLE XXXIV

JUDGMENTS OF COMBINED GROUPS AS TO RELATIVE IMPORTANCE AND EXTENT OF STUDENT ADEQUACY IN SELECTED ASPECTS OF ANIMAL PRODUCTION AND FOOD TECHNOLOGY

ITEMS	ADMINISTRATORS Combined Group; N=22					INSTRUCTORS Combined Group; N=96					SENIOR STUDENTS Combined Group; N=91					ALL INSTITUTIONAL Respondents Combined Group N = 22+96+91=209					DIRECTORS Combined Group; N=29				
	Importance			Student Adequacy		Importance			Student Adequacy		Importance			Student Adequacy		Importance			Student Adequacy		Importance			Student Adequacy	
	Mean	Rating	Rank	Mean	Rank	Mean	Rating	Rank	Mean	Rank	Mean	Rating	Rank	Mean	Rank	Mean	Rating	Rank	Mean	Rank	Mean	Rating	Rank	Mean	Rank
1. Animal physiology.	3.61	V I	8	3.13	7	3.61	V I	8	3.33	5	3.58	V I	11	2.92	9	3.60	V I	9	3.12	7	3.27	I	9	2.90	5
2. Animal nutrition.	3.98	V I	1	3.28	5	4.25	V I	1	3.70	1	4.10	V I	1	3.01	6	4.11	V I	1	3.33	3	3.75	V I	3	2.72	2
3. Animal breeding.	3.93	V I	3	3.61	1	4.15	V I	3	3.66	2	3.88	V I	7	3.12	3	3.98	V I	3	3.46	1	3.68	V I	5	2.57	4
4. Poultry science. (Physiology, breeding, disease control, nutrition, etc.)	3.94	V I	2	3.45	2	4.15	V I	2	3.66	3	3.98	V I	5	3.28	1	4.02	V I	2	3.46	2	4.10	V I	1	3.03	1
5. Livestock management.	3.62	V I	7	3.22	6	3.83	V I	5	3.22	7	3.78	V I	8	3.06	5	3.74	V I	7	3.16	6	3.75	V I	4	2.72	3
6. Animal health. (Diseases and parasitic control)	3.82	V I	4	3.44	3	3.84	V I	4	3.33	4	3.99	V I	4	3.01	7	3.88	V I	4	3.26	5	3.86	V I	2	2.48	6
7. Dairy products analysis.	3.46	I	10	2.91	8	3.35	I	10	3.07	9	3.67	V I	9	2.91	10	3.82	V I	5	2.96	9	2.93	I	11	2.07	10
8. Dairy product processing.	3.72	V I	6	3.42	4	3.69	V I	7	3.31	6	4.02	V I	2	3.10	4	3.81	V I	6	3.27	4	3.28	I	8	2.18	8
9. Food processing & preservation.	3.55	V I	9	2.73	9	3.69	V I	6	3.14	8	3.96	V I	6	3.18	2	3.47	I	11	3.01	8	3.34	I	7	2.17	9
10. Food inspection.	3.75	V I	5	2.61	10	3.43	I	9	2.82	11	3.65	V I	10	2.78	11	3.61	V I	8	2.73	11	3.00	I	10	1.85	11
11. Human nutrition.	3.31	I	11	2.52	11	3.33	I	11	2.95	10	4.00	V I	3	2.95	8	3.54	V I	10	2.80	10	3.37	I	6	2.25	7
12. Seafood & meat technology.	2.33	S I	12	2.04	12	2.91	I	12	2.43	12	3.26	I	12	2.44	12	2.83	I	12	2.30	12	2.82	I	12	1.51	12
13. Courses related to ocean science.	2.20	S I	13	1.87	13	2.49	S I	13	2.19	13	2.86	I	13	2.22	13	2.51	I	13	2.09	13	2.55	I	13	1.32	13

Note: Symbols used in Rating

V I = Very Important
I = Important
S I = Slightly Important

to be in agreement that considerable emphasis should be given to three items, (a) Poultry Science; (b) Animal Nutrition, and (c) Animal Breeding.

In terms of importance for these three items, the level of "very important" was clearly the judgment of all groups. The lower score ratings were given to the items "Courses related to Ocean Science" and "Seafood and Meat Technology".

As might be expected, student adequacy for these items also registered relatively low.

Generally, all items in this area received either "important" or "very important" ratings except the items "Courses related to Ocean Science" and "Seafood and Meat Technology" which received a judgemtn of "slightly important" by administrators, by combined institutional grouping and by directors.

Data depicting responses regarding importance of "General Courses" are summarized in Table XXXV. The item "Islamic Culture" received the highest rating by the combined group of the Universities and the Agricultural Institute rating of "very important". Directors responses were essentially in agreement of the importance of "General Plant" (Botany) which was emphasized by all groups with rating level of "very important" and ranking of second.

However, a relatively low emphasis of importance was given to "Calculus" as a general course and as one of the schools requirements.

In terms of student adequacy, all groups expressed some doubt that preparation by the institutions was good enough.

When responses secured in the area of "General Courses" are compared to those of other areas, it can be concluded that all respondent

TABLE XXXV

JUDGMENTS OF COMBINED GROUPS AS TO RELATIVE IMPORTANCE AND EXTENT OF STUDENT ADEQUACY IN SELECTED ASPECTS OF GENERAL COURSES

ITEMS	ADMINISTRATORS Combined Group; N=22					INSTRUCTORS Combined Group; N=96					SENIOR STUDENTS Combined Group; N=91					ALL INSTITUTIONAL Respondents Combined Group N = 22+96+91=209					DIRECTORS Combined Group; N=29				
	Importance			Student Adequacy		Importance			Student Adequacy		Importance			Student Adequacy		Importance			Student Adequacy		Importance			Student Adequacy	
	Mean	Rating	Rank	Mean	Rank	Mean	Rating	Rank	Mean	Rank	Mean	Rating	Rank	Mean	Rank	Mean	Rating	Rank	Mean	Rank	Mean	Rating	Rank	Mean	Rank
1. Organic chemistry.	3.59	V I	6	2.55	8	3.70	V I	8	2.89	8	3.60	V I	7	2.66	7	3.63	V I	7	2.70	8	3.31	I	6	2.44	7
2. Geology.	2.59	I	11	2.07	10	3.22	I	10	2.53	10	3.22	I	10	2.40	11	3.01	I	11	2.33	10	3.10	I	9	2.27	9
3. Physics.	3.64	V I	4	2.88	5	3.48	I	9	2.61	9	3.11	I	11	2.54	10	3.41	I	9	2.67	9	2.93	I	10	2.25	10
4. General chemistry.	3.94	V I	2	3.26	3	3.72	V I	7	3.04	5	3.50	V I	8	2.74	6	3.72	V I	5	3.01	4	3.20	I	8	2.57	6
5. Arabic languages.	3.29	I	9	2.35	9	3.74	V I	4	3.33	3	3.77	V I	4	3.02	4	3.60	V I	8	2.90	6	3.42	I	4	2.96	4
6. Islamic culture.	3.59	V I	5	2.92	4	4.16	V I	1	3.49	1	4.17	V I	1	3.39	1	3.97	V I	2	3.26	3	3.58	V I	3	3.35	1
7. Mathematics.	3.90	V I	3	2.86	6	3.73	V I	5	2.99	6	3.63	V I	6	2.91	5	3.75	V I	4	2.92	5	3.24	I	7	2.75	5
8. Calculus.	2.69	I	10	2.01	11	3.11	I	11	2.31	11	3.28	I	9	2.59	8	3.02	I	10	2.30	11	2.82	I	11	2.25	11
9. Biochemistry.	3.59	V I	7	2.76	7	3.73	V I	6	2.89	7	3.68	V I	5	2.58	9	3.66	V I	6	2.74	7	3.34	I	5	2.39	8
10. General plant.	4.11	V I	1	3.38	2	4.07	V I	2	3.34	2	4.06	V I	2	3.10	2	4.08	V I	1	3.27	2	4.10	V I	1	3.21	2
11. General zoology.	3.57	V I	8	3.65	1	3.91	V I	3	3.25	4	3.98	V I	3	3.06	3	3.82	V I	3	3.32	1	4.03	V I	2	3.10	3

Note: Symbols used in Rating

V I = Important
I = Important

groups are cognizant of the importance of general studies as essential to the preparation of agricultural specialists.

A summary of the responses of combined institutional grouping and directors to the importance of Summer Internship (Training) can be seen through data presented in Table XXXVI. It is obvious that the groups largely agreed as to the importance of, (a) "Agricultural Mechanics" rated as "very important" and ranked the first in terms of importance and (b) "Plant Production and Plant Protection" was given a considerable importance in terms of summer internship by all groups which was reflected by the level of judgment, "very important".

Relatively the lower rating of student adequacy was given to summer internship in "Adult Education and Adoption of New Practices" which is "very important" by combined institutional grouping and directors.

The combined institutional grouping judgment was unanimous in that all items in this area received a rating of "very important". Directors were in agreement except for the item "Food Technology and Dairy Science", which rated "important".

A summary of responses of groups regarding the "importance of selected factors, items, and procedures which should be considered in developing and implementing Agricultural curricula are to be found by reviewing data presented in Table XXXVII. The most important item in the judgment of respondents was "the teaching faculty is strongly committed to exerting to a special effort to provide effective training for professional agriculturalists". Almost equally to be emphasized was "securing evidence that teaching faculty is willing to place emphasis upon the further development and implementation of indigenous

TABLE XXXVI

JUDGMENTS OF COMBINED GROUPS AS TO RELATIVE IMPORTANCE AND EXTENT OF STUDENT ADEQUACY SELECTED ASPECTS OF SUMMER INTERNSHIP (TRAINING)

ITEMS	ADMINISTRATORS Combined Group; N=22					INSTRUCTORS Combined Group; N=96					SENIOR STUDENTS Combined Group; N=91					ALL INSTITUTIONAL Respondents Combined Group N = 22+96+91=209					DIRECTORS Combined Group; N=29				
	Importance			Student Adequacy		Importance			Student Adequacy		Importance			Student Adequacy		Importance			Student Adequacy		Importance			Student Adequacy	
	Mean	Rating	Rank	Mean	Rank	Mean	Rating	Rank	Mean	Rank	Mean	Rating	Rank	Mean	Rank	Mean	Rating	Rank	Mean	Rank	Mean	Rating	Rank	Mean	Rank
1. Agricultural mechanics.	4.45	V I	1	3.32	6	4.30	V I	1	3.41	3	4.26	V I	1	3.00	7	4.33	V I	1	3.24	4	4.27	V I	1	2.66	5
2. Agricultural economics.	3.52	V I	8	3.17	7	3.59	V I	10	2.91	8	3.89	V I	8	3.03	3	3.66	V I	8	3.03	7	3.79	V I	7	2.51	7
3. Extension planning.	3.40	I	9	3.01	8	3.75	V I	8	2.75	9	3.62	V I	10	2.68	10	3.59	V I	10	2.81	9	3.82	V I	6	2.62	6
4. Extension teaching and demonstration.	3.91	V I	3	3.35	4	4.18	V I	3	2.95	7	4.16	V I	3	2.97	8	4.08	V I	4	3.09	6	4.13	V I	3	2.82	2
5. Plant production & protection.	4.08	V I	2	3.42	2	4.21	V I	2	3.43	2	4.09	V I	4	3.02	4	4.12	V I	3	3.29	3	4.17	V I	2	2.93	1
6. Food technology & dairy science.	3.72	V I	7	2.62	9	3.89	V I	7	3.05	6	3.92	V I	7	3.02	5	3.84	V I	6	2.89	8	3.31	I	10	2.35	10
7. Animal production.	3.88	V I	4	3.40	3	4.80	V I	4	3.46	1	4.18	V I	2	3.22	1	4.28	V I	2	3.36	1	3.51	V I	9	2.67	4
8. Soil science.	3.81	V I	5	3.34	5	3.74	V I	9	3.11	5	3.78	V I	9	3.01	6	3.77	V I	7	3.15	5	3.62	V I	8	2.44	8
9. Poultry production.	3.80	V I	6	3.50	1	4.11	V I	5	3.35	4	4.01	V I	6	3.15	2	3.97	V I	5	3.33	2	3.96	V I	4	2.82	3
10. Adult education and adoption of new practices.	2.99	I	10	1.86	10	3.93	V I	6	2.37	10	4.08	V I	5	2.76	9	3.66	V I	9	2.33	10	3.89	V I	5	2.42	9

Note: Symbols used in Rating

V I = Very Important
I = Important

TABLE XXXVII

JUDGMENTS OF COMBINED GROUPS AS TO RELATIVE IMPORTANCE OF SELECTED FACTORS, ITEMS, AND PROCEDURES AS THESE RELATED TO CURRICULUM DEVELOPMENT AND IMPLEMENTATION

Statements	ADMINISTRATORS Combined Group; N=22			INSTRUCTORS Combined Group; N=96			SENIOR STUDENTS Combined Group; N=91			ALL INSTITUTIONAL Respondents Combined Group N = 22+96+91=209			DIRECTORS Combined Group; N=29		
	Degree of Importance			Degree of Importance			Degree of Importance			Degree of Importance			Degree of Importance		
	Mean	Rating	Rank	Mean	Rating	Rank	Mean	Rating	Rank	Mean	Rating	Rank	Mean	Rating	Rank
1. Assessment of performance of graduates on the job.	4.38	I	3	4.61	V I	1	4.34	I	4	4.59	V I	1	4.48	I	3
2. Securing involvement of Branch and Regional Directors through seminars and workshops.	3.44	U	15	4.02	I	13	4.22	I	9	3.89	I	14	4.51	V I	2
3. Securing involvement of college of agriculture and the agricultural institute students in determining their needs, interests and aspirations.	3.48	U	14	3.82	I	16	4.47	I	2	3.92	I	12	4.10	I	12
4. Assessment of the extent of cooperative efforts and involvement between administration and teaching faculty of the university and other agricultural agencies and organizations.	4.18	I	5	4.29	I	7	4.30	I	5	4.25	I	5	4.41	I	5
5. Securing involvement of graduates now serving in agricultural positions.	4.04	I	8	4.33	I	5	4.23	I	8	4.20	I	7	4.44	I	4
6. Securing involvement of non-Saudies now serving in agricultural positions.	3.37	U	16	4.05	I	12	3.50	I	16	3.64	I	16	3.24	U	16
7. Securing involvement of selected farmers through agricultural offices.	3.85	I	9	4.02	I	14	3.83	I	15	3.90	I	13	3.96	I	14
8. Securing involvement of consultants from other countries.	3.79	I	11	4.15	I	11	3.86	I	14	3.93	I	11	3.79	I	15
9. Giving due study and consideration to culture and tradition as these have affected teaching, learning and adoption of agricultural practices.	3.77	I	12	4.16	I	10	4.25	I	7	4.06	I	10	4.00	I	13
10. Securing copies of and studying reference to job descriptions and/or official regulations which affect the work of agriculturalists.	3.60	I	13	3.94	I	15	4.04	I	12	3.86	I	15	4.13	I	11
11. Securing evidence that institutional administrators are committed to a special effort to provide effective training for professional agriculturalists.	3.84	I	10	4.32	I	6	4.40	I	3	4.18	I	8	4.31	I	8
12. Securing evidence that the teaching faculty is strongly committed to exerting a special effort to provide effective training for professional agriculturalists.	4.47	I	1	4.46	I	3	4.62	V I	1	4.51	V I	2	4.33	I	7
13. Securing evidence that the teaching faculty is encouraged to become aware of and develop an interest in solving important problems encountered in agricultural development.	4.12	I	6	4.37	I	4	4.19	I	10	4.22	I	6	4.24	I	10
14. Securing evidence that institutional administrators are willing to place emphasis upon further development and implementation of indigenous agricultural research services.	4.31	I	4	4.18	I	9	4.29	I	6	4.26	I	4	4.41	I	6
15. Securing evidence that teaching faculty are willing to place emphasis upon the further development and implementation of indigenous agricultural research services.	4.46	I	2	4.55	V I	2	4.14	I	11	4.38	I	3	4.55	V I	1
16. Securing evidence that institutional administrators attempt to give high priority to the allocation of resources to program preparing professional agriculturalists.	4.10	I	7	4.23	I	8	3.99	I	13	4.10	I	9	4.27	I	9

*Rating Symbols

V I = Very Important; I = Important; U = Undecided; L I = Little Importance; N I = No Importance

agricultural research services". However, in some cases there is a slight difference in terms of level of importance and ranking. For instance, statement 12 rated as "important" by the combined group of administrators and ranking first, also rated by instructors as "important" and ranked third; by senior students rated as "very important" with a ranking of first and by combined institutional grouping as "very important" and ranked second, but it was rated as "important" by directors, ranking it seventh.

Statement 15 was rated as "important" by administrators ranking second as "very important"; by instructors it ranked second as "important"; by senior students it ranked eleventh as "very important". As a combined institutional grouping, this statement was ranked third as "important" compared to directors who rated it "very important" ranking it first.

Emphasis was noticeably low in terms of "involvement of non-Saudies now serving in agricultural positions". Administrators, senior students and directors were either negative or undecided in their responses to this statement, while instructors were positive. This statement was ranked the lowest by combined institutional grouping.

Data in Table XXXVIII show a summary of responses regarding "Extent of agreement with selected goals and objectives for curriculum". In general, there was found to be considerable agreement in terms of those selected goals and/or objectives for curriculum design and implementation; (a) develop of feedback mechanism to bring field problems to the attention of agricultural researchers; (b) develop a sense of team spirit and leadership among graduates now serving as professional and (c) identifying of agricultural problems which require priority attention on regional basis.

TABLE XXXVIII

JUDGMENTS OF COMBINED GROUPS AS TO EXTENT OF AGREEMENT WITH SELECTED GOALS AND OBJECTIVES STATEMENTS RELATING TO CURRICULUM DESIGN AND IMPLEMENTATION

Statements	ADMINISTRATORS Combined Group; N=22			INSTRUCTORS Combined Group; N=96			SENIOR STUDENTS Combined Group; N=91			ALL INSTITUTIONAL Respondents Combined Group N = 22+96+91=209			DIRECTORS Combined Group; N=29		
	Degree of Agreement			Degree of Agreement			Degree of Agreement			Degree of Agreement			Degree of Agreement		
	Mean	Rating	Rank	Mean	Rating	Rank	Mean	Rating	Rank	Mean	Rating	Rank	Mean	Rating	Rank
1. Provide the dynamic pool or technological information needed to support strong programs for agricultural education and extension.	4.46	A	3	4.52	S A	5	4.25	A	5	4.41	A	4	4.55	S A	2
2. Identify agricultural problems which require priority attention on a regional basis.	4.27	A	5	4.54	S A	4	4.29	A	4	4.36	A	5	4.67	S A	1
3. Develop regional centers of excellence in various production fields at appropriate college or university.	3.88	A	7	4.11	A	7	4.01	A	7	4.00	A	7	4.11	A	7
4. Develop a feedback mechanism for bringing field problems to the attention of agricultural researchers.	4.60	S A	1	4.65	S A	1	4.32	A	3	4.52	S A	1	4.48	A	4
5. Identify new styles of operation in teaching which should be experimented within the local environment.	4.20	A	6	4.65	S A	3	4.50	S A	1	4.45	A	3	4.41	A	6
6. Identify new styles of operation in extension which should be experimented within the local environment.	4.29	A	4	4.44	A	6	4.17	A	6	4.30	A	6	4.48	A	5
7. Among graduates now serving as professionals attempt to develop a sense of team spirit and leadership.	4.48	A	2	4.64	S A	2	4.42	A	2	4.51	S A	2	4.55	S A	3

Note: Symbols used in Rating

S A = Strongly Agree
A = Agree
U = Undecided

A somewhat lower level of agreement was given to the goal "develop regional centers of excellence in various production fields at appropriate college or university.

Finally, summarized data regarding "selected statement dealing wigh agricultural courses content". Responses were received by the respective groups as a combined institutional grouping, which are shown in Table XXXIX which reflect that, (a) more prerequisites needed; (b) more facilities and audiovisual needed to help students understand the subject matter; (c) evaluation should be conducted annually; (d) more concentration upon laboratory and/or work in the field rather than theory (lectures), and (e) summer internship is indeed important and should be given more support and encouragement.

It should be noted that responses to the statement "Nothing needs to be added to the current courses", were all "undecided" with ranking at or near the bottom of the list for all groups. The other two statements which seemed to elicit "undecided" responses were that "little relationship between subject matter being taught and field practices", and "strong relationship between academic practices and field practices". It would seem evident that respondents did not understand these statements.

Conclusions

An outstanding conclusion which can be drawn is that components of present curriculum in agriculture are considered to be either "important" or "very important" by almost all groups and is particularly reflected in data which show the combined grouping.

TABLE XXXIX

JUDGMENTS OF COMBINED GROUPS AS TO THE RELATIVE SUITABILITY OF SELECTED ITEMS OF CONTENT IN THE AGRICULTURAL CURRICULUM

Statements	ADMINISTRATORS Combined Group; N=22			INSTRUCTORS Combined Group; N=96			SENIOR STUDENTS Combined Group; N=91			ALL INSTITUTIONAL Respondents Combined Group N = 22+96+91=209			DIRECTORS Combined Group; N=29		
	Degree of Agreement			Degree of Agreement			Degree of Agreement			Degree of Agreement			Degree of Agreement		
	Mean	Rating	Rank	Mean	Rating	Rank	Mean	Rating	Rank	Mean	Rating	Rank	Mean	Rating	Rank
1. Agricultural courses are very related.	4.19	A	4	4.07	A	4	3.45	U	11	3.90	A	6	3.00	U	10
2. Agricultural courses are not enough to help a student in his major field.	3.05	U	10	3.23	U	9	3.52	A	10	3.26	U	10	3.51	A	9
3. Little relationship between subjects being taught and field practices.	3.20	U	8	3.20	U	10	3.79	A	8	3.39	U	9	3.86	A	8
4. Strong relationship between academic practices and field practices.	3.70	A	7	3.05	U	11	2.90	U	12	3.21	U	11	2.24	U	12
5. Need more subject matter content added.	3.18	U	9	3.62	A	8	3.88	A	7	3.56	A	8	3.89	A	7
6. Courses and their contents need to be modified to fit the agricultural situation and field activities.	3.99	A	5	4.05	A	5	4.19	A	5	4.07	A	5	4.24	A	4
7. Need more prerequisites to help students understand the material.	3.03	U	11	3.83	A	7	3.95	A	6	3.60	A	7	4.20	A	5
8. Need more facilities and audiovisual material to help student understand subjects easily.	4.42	A	1	4.44	A	2	4.21	A	4	4.35	A	2	4.17	A	6
9. More concentration upon laboratories and/or work in the field rather than theory (lectures).	3.85	A	6	3.97	A	6	4.60	S A	1	4.14	A	4	4.48	A	1
10. Summer training is important and needs to be emphasized.	4.36	A	3	4.57	S A	1	4.41	A	2	4.44	A	1	4.37	A	2
11. I earned a lot of knowledge and skills in my area (only for students).							3.74	A	9	0.00	-	-	0.00	-	-
12. In my judgment nothing needs to be added to the current courses in my specialized area.	2.70	U	12	2.86	U	12	2.86	U	13	2.80	U	12	2.44	U	11
13. Evaluation needs to be conducted annually to help in developing subject matter.	4.36	A	2	4.16	A	3	4.35	A	3	4.29	A	3	4.31	A	3

Note: Symbols used in Rating

S A = Strongly Agree
A = Agree
U = Undecided

Since all groups rated the two items, (a) "Agricultural Extension Planning" and (b) "Extension Teaching and Demonstration" as "very important", it would seem well to further strengthen these two areas of teaching.

Loyalty is the concept which permeates the Islamic culture and is still a predominant characteristic of present day educators, this witnessed to by the fact that this item shown in the survey schedule in the "General" area, was ranked first and rated as "important" by both instructors and senior students. Administrators ranked the same item as fifth as compared to a third place ranking by directors. Student adequacy for this item likewise is judged to be relatively high. Thus, it must be concluded that Saudies are strong in their beliefs in the importance of loyalty.

The conclusion must be reached that the more important factors in developing agricultural curriculum are expressed in the statement, "securing evidence that teaching faculty is willing to place emphasis upon the further development and implementation of indigenous agricultural research services".

Likewise a statement rated high by all groups and ranked either first or third by all groups except directors who ranked it seventh was "securing evidence that the teaching faculty is strongly committed to a special effort to provide effective training for professional agriculturalists".

It is further concluded that the statement, "assessment of performance of graduates on the job", was considered quite "important" by all group respondents in all groups.

It is further concluded that administrators were not altogether positive in their thinking in terms of a proposed policy reflected in each of three statements, (a) "securing involvement of the main branches and regional director through seminars and workshops"; (b) "securing involvement of colleges of Agriculture and the Agricultural Institute students in determining their needs, interests and aspirations"; and (c) "securing involvement of non-Saudies now serving in agricultural positions". Groups other than administrators were more positive about these statements as a proposed policy. In particular, directors were "undecided" about "securing involvement of non-Saudies now serving in agricultural positions".

It is further concluded that all groups were in positive agreement in their assessment that the goals and/or objectives "among graduates now serving as professionals do attempt to develop a sense of team spirit and leadership thus being of vital importance".

It is quite evident that educators, students, and directors are in positive agreement that more concentration upon laboratories and/or work in the field as compared to an emphasis upon theory (lecture) is to be desired.

Respondents from the Agricultural Institute would seem to indicate a more direct adherence to the concept that strong relationships should exist between academic study and field practices as compared to respondents from the two Universities.

All groups were in relatively positive agreement with regard to the concept that evaluation should be conducted annually to help in further development and revision of subject studies.

In general, directors of the Ministry of Agriculture and Water, Regional Branches and the Agricultural Bank, Main Branches did not rate student adequacy quite as high as did respondents from the two Universities. Likewise respondents from the Agricultural Institute also assessed student adequacy slightly lower.

It can be further concluded that administrators are presently not ready to agree to include students and directors directly in the development and revision of agricultural curricula.

Because of the relatively low rating and ranking given by administrators from King Faisal University and the Agricultural Institute to the item "using computer in Agriculture", it can be concluded that few respondents were very well informed about the potential for the computer in agriculture in future years.

The most important rating was given to "Vegetables" and "Field Crops", among all items in the areas of agriculture. It can be concluded that particular emphasis should be given to instruction and skills development in these two items.

It is further concluded that directors considered adult education more important for summer training than did the administrators at the three agricultural schools, although all groups appear to consider summer training as essential to improvement of worker performance as agricultural specialists.

It also concluded that since all groups were in agreement that the present agricultural curricula needed to be strengthened by adding more subject matter or content, that efforts be immediately undertaken to organize an on-going functionary committee to periodically review curricula.

Recommendations

Based on findings of the review of literature and findings secured through data analysis, the following recommendations were drawn by the researcher.

A combined committee from the Colleges of Agriculture, the Agricultural Institute, the Ministry of Agriculture and Water, and the Agricultural Bank be carefully selected and charged with the responsibility to make definite plans for developing and improving present curriculum and develop an evaluation system designed for the present agricultural curriculum and specially directed toward the training of agricultural specialists.

Through combined efforts of the groups mentioned above, development and implementation of a well-planned seminar for teaching faculty of the institutions, emphasizing the various concepts and practices inherents in further development and implementation of indigenous agriculture research services should definitely be undertaken.

In a like manner, attention should be given to development of a program of seminars and conferences involving students of the Colleges of Agriculture and the Agricultural Institute in determining their needs, interests, and aspirations.

Further, it is to be strongly recommended that a program be developed particularly involving staff of the Ministry of Agriculture and Water and the Agricultural Bank in assessing the performance of the graduates on the job. This program should be directly tied to a periodic evaluation at each of the Colleges of Agriculture and the Agricultural Institute.

Provide means to insure the involvement of students, selected knowledgeable farmers, and directors from the Ministry of Agriculture and Water and the Agricultural Bank in developing and revision of agricultural curriculum to be more effective based upon the local and regional needs and the changings in agricultural situation.

Provide for recognition to be given to the more recently appointed teaching faculty who have demonstrated a strong commitment and exerted special effort to provide effective training for professional agriculturalists.

Develop a seminar designed specially for administrators, in which emphasis is specially directed to curriculum development and revision, leadership and staff development, evaluation and possible revision in institutional goals and objectives.

Develop a seminar to explore the values of strong emphasis upon the Islamic culture for those engaged in agricultural jobs.

Further research should be encouraged and carried out in the area of curriculum revision and development, teaching methods best suited to extension education for adults and to institutional management and organization as related to professional training of agriculturalists.

Prepare an instructional seminar specially directed twoards University and Institute students designed to explore and show both methods and the importance of research in all areas in agricultural activity. Particular attention should be given to presentation in a simple way which can be more understandable by students.

A consultive, participative seminar and/or conference be designed for non-Saudi instructors and/or administrators, which would be directed toward establishing and redefining special goals and objectives

for agriculture and agricultural education based on the local situation in the Kingdom of Saudi Arabia.

In view of the possible future potential of the computer as an important tool in agriculture, particularly management, it is further recommended that persons with expertise in computer technology and particularly its applications in agriculture be brought from other countries to assist administrators, instructors, and directors to become more knowledgeable about the use of computer in agriculture.

It is recommended that people with particular expertise in the area of vegetables and field crop production as well as hydroponics be employed to conduct training seminars for instructors specializing in teaching in these areas.

It was further recommended that high attention should be given to water-soil relationship in terms of an instructional unit or subject to become more effective to students who will work in water usage and management as well as in water drainage; this can be accomplished by establishing an institute within or under supervision of the College of Agriculture.

Because of low importance which was given to the items "Toxicology" and "Nematology" by instructors from the Agricultural Institute, it is strongly recommended that instructor knowledge and skills be updated and that these two items be given emphasis in the training program.

To promote achievement to higher level of agricultural production, it is recommended that emphasis should be placed upon the teaching of agricultural economics in Saudi Arabia, stressing solving of problems which might arise from local and environmental situations; this should be linked to the religion and social traditions.

It is recommended that the internship program should be designed by selected representatives from the Colleges of Agriculture, the Agricultural Institute, the Ministry of Agriculture and Water and the Agricultural Bank in order to be more closely related to the performance of graduates.

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APPENDIX A

QUESTIONNAIRES (ENGLISH LANGUAGE)

QUESTIONNAIRE AND INTERVIEW FORM

ADEQUACIES OF CURRICULUM AND TRAINING IN AGRICULTURE PROVIDED AT THREE SAUDI INSTITUTIONS AS ASSESSED BY ADMINISTRATORS, INSTRUCTORS, SENIOR STUDENTS, AND REGIONAL DIRECTORS

Each respondent will be given a copy of this instrument. Some respondents may be interviewed as a small group, others as individuals. The researcher will be present to answer any questions which may arise.

Dear Respondent,

I would like to identify myself as one of the King Saud University faculty missioneers presently in the United States of America working toward achievement of the doctoral degree in Agricultural Education. I am now at the stage of gathering research data for my dissertation thesis. This thesis is an attempt to assess certain indication of the adequacy of the curriculum and training programs as provided by agricultural institutions in Saudi Arabia. You will please understand how important it is to obtain reliable information about programs now training future professional agricultural workers for our country. Your cooperation in completing the accompanying questionnaires is very essential and will be greatly appreciated. Upon the completion of this thesis, I will be glad to send you a copy of findings if you so desire.

Thank you,

Abdullah Al-Zaidi
College of Agriculture
King Saud University

sh

Examples to help respondents answer the questionnaires

Part II

(A) Importance of the item.
(B) Is the institute prepares students adequate or inadequate.

EXAMPLE 1

	Importance					Student Adequacy				
	EI	VI	I	SI	LI	5	4	3	2	1
•Rural social development and extension		✓					✓			

This means that this item is very important and the institute or college prepares students adequately.

Part III

Your agreement with the importance of the items, procedures and/or factors to be considered when developing and implementing curriculum.

EXAMPLE 2

	VI	I	U	LI	NI
•Assessment of performance of graduate on the job.		✓			

When you mark I, this means that you rate it important.

Part IV and V:

The same as part III in terms of your agreement or disagreement.

I will be present during answering these questionnaires to explain and/or answer any question which may arise.

FORM A

PART I.

For Administrators at Colleges of Agriculture at King Saud University, King Faisal University and the Agricultural Institute in Buraydah.

Please answer the following:

Name of respondent _____ Present Position_____ For how long_____Year

Where serving: _____ College of Agriculture at King Saud University.
_____ College of Agriculture at King Faisal University
_____ The Agricultural Institute in Buraydah

Degree Held: _____Doctoral _____Master _____Bachelor

Institution_____ Major_____

Place of living: _____Rural _____Urban

PART II.

(A) Evaluate each of the following in terms of relative importance for students graduating from your institution.

EI = Extremely Important
VI = Very Important
I = Important
SI = Somewhat Important
LI = Little or Not Important

(B) On the scale provided, check the extent to which you recognize students graduating from your institution are able to perform.

Totally Adequate Totally Inadequate

5 4 3 2 1

Please check the appropriate answer.

Area	Importance (A) EI	VI	I	SI	LI		Student Adequacy (B) 5	4	3	2	1
A. Agricultural Economic, Rural Sociology and Agricultural Extension:											
Courses taught in area of:											
1. Rural social development and leadership.											
2. Saudi Agricultural economics.											
3. Marketing and Agricultural Accounting.											
4. Farm management.											
5. Agricultural Cooperatives.											
6. Statistic and Research Methods.											
7. Using computer in Agriculture.											
8. Agricultural Extension planning.											
9. Extension teaching and demonstration.											
B Plant Production and Protection:											
Courses taught in area of:											
1. Nurseries and floriculture.											
2. Plant nutrition.											
3. Plant physiology.											

FORM B

Part I.

For Instructional Staff at Colleges of Agriculture at King Saud University, King Faisal University and the Agricultural Institute in Buraydah.

Please answer the following:

Name of respondent_____ Present Position_____ For how long____Years

Where serving: ___ College of Agriculture at King Saud University.
_____ College of Agriculture at King Faisal University.
_____ The Agricultural Institute at Buraydah.

Degree Held: _____Doctoral _____Master _____Bachelor

Institution_____ Major_____

Course or Courses you are teaching_____

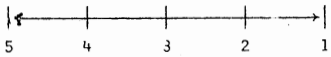
PART II.

(A) Evaluate each of the following in terms of the importance for graduates of your institute:

EI = Extremely Important
VI = Very Important
I = Important
SI = Somewhat Important
LI = Little or Not Important

(B) On the scale provided, check the extent to which you recognize your institution is preparing students to perform in this area.

Totally Adequate Totally Inadequate



Please check the appropriate answer.

Area	Importance (A) EI	VI	I	SI	LI		Student Adequacy (B) 5	4	3	2	1
A. Agricultural Economic, Rural Sociology and Agricultural Extension: Courses taught in area of:											
1. Rural social development and leadership.											
2. Saudi Agricultural economics.											
3. Marketing and Agricultural Accounting.											
4. Farm management.											
5. Agricultural Cooperatives.											
6. Statistic and Research Methods.											
7. Using computer in Agriculture.											
8. Agricultural Extension planning.											
9. Extension teaching and demonstration.											
B. Plant Production and Protection: Courses are taught in area of:											
1. Nurseries and floriculture.											
2. Plant nutrition.											
3. Plant physiology.											

FORM C

PART I.

For Senior Students at Colleges of Agriculture at King Saud University, King Faisal University and at the Agricultural Institute in Buraydah.

Please answer the following:

Name of respondent_____ Age_____ Major_____

College or Institute: _____ College of Agriculture at King Saud University.
_____ College of Agriculture at King Faisal University.
_____ The Agricultural Institute at Buraydah.

Place of Birth: _____Rural Village _____Urban

Place presently living: _____Rural _____Urban

Father's position at the present time: _____Farmer _____Other

Was he a farmer? _____Yes _____No

Does your father own a farm? _____Yes _____No

PART II.

(A) Evaluate each of the following in terms of importance for you in the job you anticipate taking after graduation according to the provided evaluation scale:

EI = Extremely Important
VI = Very Important
I = Important
SI = Somewhat Important
LI = Little or Not Important

(B) On the scale provided, check the extent to which you recognize the training which you receive that will prove adequate for the job in which you anticipate working:

Totally Adequate ← 5 — 4 — 3 — 2 — 1 → Totally Inadequate

Please check the appropriate answer.

Area	Importance (A) EI	VI	I	SI	LI		Student Adequacy (B) 5	4	3	2	1
A. Agricultural Economic, Rural Sociology and Agricultural Extension:											
Courses taught in area of:											
1. Rural social development and leadership.											
2. Saudi Agricultural economics.											
3. Marketing and Agricultural Accounting.											
4. Farm management.											
5. Agricultural Cooperatives.											
6. Statistic and Research Methods.											
7. Using computer in Agriculture.											
8. Agricultural Extension planning.											
9. Extension teaching and demonstration.											
B. Plant Production and Protection:											
Courses taught in area of:											
1. Nurseries and floriculture.											
2. Plant nutrition.											
3. Plant physiology.											

FORM D

PART I.

For Regional Branch Directors of the Ministry of Agriculture and Water and for Directors of Regional Branches of the Agricultural Bank.

Please answer the following:

A. Name of respondent _____

Present Position_____ Where_____ For how long_____Year

Degree Held: _____Diploma _____B.S. _____M.S. or Higher

College or Institute from which you are graduated:

_____University of Riyadh, When_____.

_____King Faisal University, When_____.

_____Agricultural Institute, When_____.

_____Elemencary Agricultural School, When_____.

_____School outside the kingdom, Where_____ When_____.

B. Please check what percentage of your Agricultural employees fall into the following categories. Check the appropriate column.

Under 10%	10-25%	25-40%	40-55%	55-70%	70-85%	85-100%	Employees
							1. Non-Saudi Agricultural Employees.
							2. Graduate of King Saud University.
							3. Graduate of King Faisal University.
							4. Graduate of the Agricultural Institute.
							5. Have received no higher agricultural education.
							6. Graduate of Agricultural institute in another country.
							7. Graduate of university or college in another country.

PART II.

(A) Evaluate each of the following in terms of importance for the persons employed in a job which you direct or supervise.

EI = Extremely Important
VI = Very Important
I = Important
SI = Somewhat Important
LI = Little or Not Important

(B) On the scale provided, check the extent to which you feel the performance of the agricultural employees which you supervise is considered adequate.

Totally Adequate Totally Inadequate

5 4 3 2 1

Please check the appropriate answer.

Area	Importance (A) EI	VI	I	SI	LI		Student Adequacy (B) 5	4	3	2	1
A. Agricultural Economic, Rural Sociology and Agricultural Extension.											
Courses taught in area of:											
1. Rural social development and leadership.											
2. Saudi Agricultural economics.											
3. Marketing and Agricultural Accounting.											
4. Farm management.											
5. Agricultural Cooperatives.											
6. Statistic and Research Methods.											
7. Using computer in Agriculture.											
8. Agricultural Extension planning.											
9. Extension teaching and demonstration.											
B. Plant Production and Protection:											
Courses taught in area of:											
1. Nurseries and floriculture.											
2. Plant nutrition.											
3. Plant physiology.											

Area	Importance (A) EI	VI	I	SI	LI		Student Adequacy (B) 5	4	3	2	1
4. Plant pathology. (Bacterial & fungi diseases)											
5. Field crops.											
6. Vegetables.											
7. Fruit production.											
8. Plant breeding & genetics.											
9. Insect physiology.											
10. Agricultural microbiology.											
11. Insects and pests control.											
12. Forage and forestry.											
13. Useful insects. (Example: Bees)											
14. Toxicology.											
15. Nematology.											
16. Landscape.											
C. Agricultural Mechanics & Soil Science: Courses taught in areas of:											
1. Irrigation and drainage.											
2. Irrigation engineering.											
3. Surveying.											
4. Food processing engineering.											
5. Agricultural machines and workshop.											
6. Machine maintenance and safety.											
7. Soil morphology & erosion.											
8. Soil chemistry.											
9. Soil fertilization and fertilizers.											
10. Soil conservation.											
11. Soil-water relationship.											
12. Maintaining stabilization planting.											
D. Animal Production and Food Technology: Courses taught in areas of:											
1. Animal physiology.											
2. Animal nutrition.											
3. Animal breeding.											
4. Poultry science. (Physiology, breeding, disease control, nutrition, etc.)											
5. Livestock management.											
6. Animal health. (Diseases and parasitic control)											
7. Dairy products analysis.											
8. Dairy product processing.											
9. Food processing & preservation.											
10. Food inspection.											
11. Human nutrition.											
12. Seafood & meat technology.											
13. Courses related to ocean science.											
E. General Courses:											
1. Organic chemistry.											
2. Geology.											
3. Physics.											
4. General chemistry.											
5. Arabic languages.											
6. Islamic culture.											
7. Mathematics.											
8. Calculus.											
9. Biochemistry.											
10. General plant.											
11. General zoology.											
F. Summer Internship (Training): How do you rate its need in each of the following areas:											
1. Agricultural mechanics.											
2. Agricultural economics.											
3. Extension planning.											
4. Extension teaching and demonstration.											
5. Plant production & protection.											
6. Food technology & dairy science.											
7. Animal production.											
8. Soil science.											
9. Poultry production.											
10. Adult education and adoption of new practices.											

PART III.

Please check the extent of your agreement with the importance of the following factors, items or procedures which should be given consideration when developing and implementing curricula for the preparation of Professionals in Agriculture.

VI = Very Important
I = Important
U = Undecided
LI = Little Importance
NI = Of No Importance

Factors, Items or Procedures	VI	I	U	LI	NI
(1) Assessment of performance of graduates on the job.					
(2) Securing involvement of Branch and Regional Directors through seminars and workshops.					
(3) Securing involvement of college of agriculture and the agricultural institute students in determining their needs, interests and aspirations.					
(4) Assessment of the extent of cooperative effort and involvement between administration and teaching faculty of the university and other agricultural agencies and organizations.					
(5) Securing involvement of graduates now serving in agricultural positions.					
(6) Securing involvement of non-Saudies now serving in agricultural positions.					
(7) Securing involvement of selected farmers through agricultural offices.					
(8) Securing involvement of consultants from other countries.					
(9) Giving due study and consideration to culture and tradition as these have affected teaching, learning and adoption of agricultural practices.					
(10) Securing copies of and studying reference to job descriptions and/or official regulations which affect the work of agriculturalists.					
(11) Securing evidence that institutional administrators are committed to a special effort to provide effective training for professional agriculturalists.					
(12) Securing evidence that the teaching faculty is strongly committed to exerting a special effort to provide effective training for professional agriculturalists.					
(13) Securing evidence that the teaching faculty is encouraged to become aware of and develop an interest in solving important problems encountered in agricultural development.					
(14) Securing evidence that institutional administrators are willing to place emphasis upon further development and implementation of indigenous agricultural research services.					
(15) Securing evidence that teaching faculty are willing to place emphasis upon the further development and implementation of indigenous agricultural research services.					
(16) Securing evidence that institutional administrators attempt to give high priority to the allocation of resources to program preparing professional agriculturalists.					
(17) Other (List) (a)					
(b)					
(c)					
(d)					
(e)					
(f)					
(g)					
(h)					

PART IV.

Please check for each of the stated goals and/or objectives listed below the column that in your own thinking best expresses your agreement or disagreement with the statement in terms of Curricula Design and Implementation.

SA = Strongly Agree
A = Agree
U = Undecided
D = Disagree
SD = Strongly Disagree

Goals and/or Objectives	SA	A	U	D	SD
(1) Provide the dynamic pool or technological information needed to support strong programs for Agricultural Education and Extension.					
(2) Identify agricultural problems which require priority attention on a regional basis.					
(3) Develop regional centers of excellence in various production fields at appropriate college or university.					
(4) Develop a feedback mechanism for bringing field problems to the attention of agricultural researchers.					
(5) Identify new styles of operation in teaching which should be experimented within the local environment.					
(6) Identify new styles of operation in extension which should be experimented within the local environment.					
(7) Among graduates now serving as professionals attempt to develop a sense of team spirit and leadership.					

PART V.

Please respond to the following statements in terms of the extent of your agreement. The statements were designed to consider agricultural subjects and/or course contents being taught in your specialized area.

SA = Strongly Agree
A = Agree
U = Undecided
D = Disagree
SD = Strongly Disagree

Items	SA	A	U	D	SD
(1) Agricultural courses are very related.					
(2) Agricultural courses are not enough to help a student in his major field.					
(3) Little relationship between subjects being taught and field practices.					
(4) Strong relationship between academic practices and field practices.					
(5) Need more subject matter content added.					
(6) Courses and their contents need to be modified to fit the agricultural situation and field activities.					
(7) Need more prerequisites to help students understand the material.					
(8) Need more facilities and audiovisual material to help student understand subjects easily.					
(9) More concentration upon laboratories and/or work in the field rather than theory (lectures).					
(10) Summer training is important and needs to be emphasized.					
(11) I earned a lot of knowledge and skills in my area (only for students).					
(12) In my judgment nothing needs to be added to the current courses in my specialized area.					
(13) Evaluation needs to be conducted annually to help in developing subject matter.					

APPENDIX B

QUESTIONNAIRES (ARABIC LANGUAGE)

بسم الله الرحمن الرحيم

عزيزى :

السلام عليكم ورحمة الله وبركاته .. وبعد :

اود ان اقدم نفسي كأحد مبتعثي جامعة الملك سعود للحصول على الدكتوراه في التعليم الزراعي من جامعة ولاية اوكلاهوما بالولايات المتحدة الامريكية وفي الوقت الحاضر اعد اطروحة الدكتوراة عن " مدى كفاءة المناهج الزراعية التي تدرس بالكليات الزراعية بجامعة الملك سعود وجامعة الملك فيصل والمعهد الزراعي ببريدة . ومدى اهمية المناهج الزراعية في اعداد الاخصائيين الزراعيين .

لذا سأكون مقدرا لك تعاونك في اكمال الاستبيان ورأيك ضروري جدا لاستكمال هذه الدراسة . واذا رغبت في الحصول على نسخة من هذه الدراسة بعد استكمالها باذن الله فانني سأكون سعيدا جدا ان اوافيك بها .

وتقبل تحياتي ،،،

عبدالله عوض الزايدى

كلية الزراعة / جامعة الملك سعود

استبيان (أ)

١ ـ

الاسم : ..... العمل الحالي : ..... مدة الخدمة فيه : .... سنة

مكان العمل : كلية الزراعة / جامعة الملك سعود (.....)

كلية الزراعة / جامعة الملك فيصل (.....)

المعهد الزراعي ببريدة (.....)

اخر شهادة حصلت عليها : ـ

دكتوراه (.....) ماجستير (.....) بكالوريوس (.....)

الجامعة او المعهد التي تخرجت منها (....) التخصص (.....)

مكان الاقامة حاليا : في الريف (.....) في المدينة (.....)

٢ ـ

أ ـ قيم كل من الاتي على ضوء اهميته للطالب المتخرج من الكلية او المعهد التي تحت ادارتك.

ب ـ ضع علامة (✓) على الدرجة الدالة على قدرة اداء خريجي الكلية او المعهد التي تحت ادارتك للاشياء (المواد) التالية :

مثال للاسترشاد في عند الاجابة على الاسئلة

	مستوى تأهيل الطالب									
	على درجة عالية من الاهمية	مهم جدا	مهم	قليل الاهمية	ليس مهم	٥	٤	٣	٢	١
تنمية المجتمع الريفي والقيادة			✓				✓			

هذا يعني ان المادة مهمة وان الكلية او المعهد يهيأ الطالب على درجة عالية من الكفاءة

استبيان (ب)

١ ـ

الاسم : (.....) العمل الحالي : (.....) مدة الخدمة فيه (....) سنة

مكان العمل : كلية الزراعة / جامعة الملك سعود : (....)

كلية الزراعة/ جامعة الملك فيصل : (....)

المعهد الزراعي ببريدة : (....)

اخر شهادة حصلت عليها :

دكتوراه (.....) ماجستير (.....) بكالوريوس (.....)

الكلية او المعهد التي تخرجت منها : (.....) التخصص (.....)

المادة او المواد التي تقوم بتدريسها :

(.....) (.....)

(.....) (.....)

(.....) (.....)

٢ ـ

أ ـ قيم كل مما يأتي على ضوء اهميته للطالب المتخرج من المعهد او الكلية التي تقوم بالتدريس فيها .

ب ـ ضع علامة (✓) ان الدرجة الدالة على امكانية الكلية او المعهد التي تعمل بها في اعداد الطالب لتطبيق المواد التالية :

مثال للاسترشاد في عند الاجابة على الاسئلة :

	الاهمية					مستوى تأهيل الطالب				
	على درجة عالية من الاهمية	مهم جدا	مهم	قليل الاهمية	ليس مهم	٥	٤	٣	٢	١
تنمية المجتمع الريفي والقيادة			✓				✓			

هذا يعني انك اعطيت اجابة على ان المادة مهمة والكلية او المعهد يهيأ الطالب على درجة عالية من الكفاءة .

استبيان (ج)

١ ـ

الاســـــم : (.....) السن (.....) التخصص (.....)

مكان الدراسة كلية الزراعة / جامعة الملك سعود (.....)

كلية الزراعة / جامعة الملك فيصل (.....)

المعهد الزراعي ببريدة (.....)

مكان الولادة : في القرية (.....) في المدينة (.....)

مكان الاقامة الحالية : الريف (.....) المدينة (.....)

مهنة والدك الحالية : مزارع (.....) غير ذلك (.....)

هل كان والدك مزارع ؟ نعم (.....) لا (.....)

هل والدك يمتلك مزرعة ؟ نعم (.....) لا (.....) .

٢ ـ

أ ـ قيم كل مما يلي على ضوء اهميته للعمل المتوقع ان تقوم به بعد تخرجك من الكلية او المعهد :

ب ـ ضع علامة (✓) على الدرجة التي تعتقد انها تدل على كفاءة اعدادك الاكاديمي للقيام بعملك المتوقع ان تشغله في الاشياء (المواد التالية)

مثال للاسترشادية عند اجابة الاسئلة :

	الاهمية					مستوى تأهيل الطالب				
	على درجة عالية من الاهمية	مهم جدا	مهم	قليل الاهمية	ليس مهم	٥	٤	٣	٢	١
تنمية المجتمع الريفي والقيادة			✓				✓			

هذا يعني انك اعطيت اهمية للمادة وان الكلية او المعهد يهيأ الطالب على درجة عالية من الكفاءة .

استبيان (د)

١ ـ الاسم : (.....) العمل الحالى (.....) المكان (.....)

مدة الخدمة فيه (.....) سنة

اخر شهادة حصلت عليها :

الدبلوم (.....) البكالوريوس (.....) الماجستير (.....)

الكلية او المعهد التي تخرجت منها (.....)

٢ ـ ضع علامة ( ) على النسبة الفنيين الزراعيين العاملين تحت اشرافك من الفئات التالية :

الفئـــة	اقل من ١٠٪	١٠ـ٢٥٪	٢٥ـ٤٠٪	٤٠ـ٥٥٪	٥٥ـ٧٠٪	٧٠ـ٨٥٪	٨٥ـ١٠٠٪
١ موظفين زراعيين غير سعوديين							
٢. خريج جامعة الملك سعود							
٣. خريج جامعة الملك فيصل							
٤. خريج المعهد الزراعي ببريدة							
٥. لم يحصل على مؤهل عالي في الزراعـــة							
٦. خريج مدارس زراعية من خارج المملكة							
٧. خريج كلية زراعية خارج المملكة							

٣ـا ـ قيم كل من الاتى على ضوء اهميته للفنيين الزراعيين فى العمل الذى تشرف عليه :

ب ـ ضع علامة ( ) على الدرجة الداله على كفاءة اداء الفنيين الزراعيين فى العمل الذى تشرف عليه لكل مما يأتى :ـ

الحقـــــــــــــــل	الاهميـــه				مستوى تأهيل الطالـــب					
	على درجه عاليـه من الاهميه	مهم جدا	مهم	قليل الاهميه	غيـر مهـم	٥	٤	٣	٢	١
أ ـ الاقتصاد الزراعى والمجتمع الريفى والارشاد الزراعى										
المواد التى تدرس فى هذا المجال :										
١ ـ تنمية المجتمع الريفى والقياده										
٢ ـ الاقتصاد الزراعى السعودى										
٣ ـ التسويق والمحاسبه الزراعيه										
٤ ـ ادارة المـــزارع										
٥ ـ التعاون الزراعـــى										
٦ ـ الاحصاء وطرق البحـــث										
٧ ـ استخدام الحاسب الالى فى الزراعه										
٨ ـ تخطيط البرامج الارشاديه الزراعيه										
٩ ـ التعليم والارشاد الزراعى وطرقه										
ب ـ الانتاج النباتى ووقاية النبـــات										
المواد التى تدرس فى هذا المجال :										
١ ـ المشاتل وعلم الزهـــور										
٢ ـ تغذية النبـــات										
٣ ـ علم وظائف الاعضاء النباتيه (فسيولوجيا نبات)										
٤ ـ امـــراض النبـــات										
٥ ـ محاصيـــل الحقـــل										
٦ ـ الخضـــار										
٧ ـ انتاج الفاكهـــه										
٨ ـ تربيـــة النبـــات										
٩ ـ وظائف لاعضاء الحشريه (فسيولوجيا حشرات)										
١٠ ـ الميكروبيولوجيا الزراعيـــه										
١١ ـ الحشرات ومقاومتهـــا										
١٢ ـ المراعى والغابـــات										
١٣ ـ الحشرات النافعه (النحل ٠٠ الخ)										
١٤ ـ علم الســـموم										
١٥ ـ النيماتودا (الديدان)										
١٦ ـ تنسيق الحدائـــق										

الحقل	الاهميه: على درجة عاليه من الاهميه	مهم جدا	مهم	قليل الاهميه	غير مهم	مستوى تأهيل الطالب: ٥	٤	٣	٢	١
جـ ـ الميكنه الزراعيه وعلوم التربه										
المواد التى تدرس فى هذا المجال :										
١ـ الرى والصرف										
٢ـ هندسة الرى										
٣ـ المساحه										
٤ـ هندسه تصنيع الاغذيه										
٥ـ الالات الزراعيه										
٦ـ صيانة الالات وطرق السلامه										
٧ـ خصائص التربه والتعريه										
٨ـ كيمياء التربه										
٩ـ تسميد التربه والاسمده										
١٠ـ حفظ التربه										
١١ـ علاقة الماء بالتربه										
١٢ـ المحافظه على المزروعات النباتيه										
د ـ الانتاج الحيوانى والصناعات الغذائيه :										
المواد التى تدرس بهذا المجال :										
١ـ علم وظائف اعضاء الحيوان (فسيولوجيا حيوان)										
٢ـ تغذية حيوان										
٣ـ تربية حيوان										
٤ـ الدواجن										
٥ـ ادارة مزارع الانتاج الحيوانى										
٦ـ صحة الحيوان										
٧ـ تحليل منتجات الالبان										
٨ـ تصنيع منتجات الالبان										
٩ـ تصنيع الاغذيه وحفظها										
١٠ـ اختبار الاغذيه										
١١ـ تغذية الانسان										
١٢ـ الاغذيه البحريه وتصنيع اللحوم										
١٣ـ المواد المتعلقه بعلوم البحار										

الحقل	الاهمية: على درجه عاليه من الاهميه	مهم جدا	مهم	قليل الاهمية	غير مهم	مستوى تأهيل الطالب: ٥	٤	٣	٢	١
هـ ـ مواد الاعداد العام										
المواد التي تدرس بهذا المجال :										
١ـ الكيمياء العضوية										
٢ـ الجيولوجيا										
٣ـ الفيزياء										
٤ـ الكيمياء العامة										
٥ـ اللغه العربيه										
٦ـ الثقافه الاسلاميه										
٧ـ الرياضيات										
٨ـ التفاضل والتكامل										
٩ـ الكيمياء الحيويه										
١٠ـ النبات العام										
١١ـ الحيوان العام										
و ـ التدريب الميدانى :										
اهميته بالنسبه للاتى :										
١ـ الميكنه الزراعيه										
٢ـ الاقتصاد الزراعى										
٣ـ التخطيط والتنظيم الارشادى										
٤ـ ارشاد الزراع										
٥ـ انتاج نباتى ووقاية النبات										
٦ـ علم صناعة الاغذيه وعلوم الالبان										
٧ـ الانتاج الحيوانى										
٨ـ علوم التربه										
٩ـ انتاج الدواجن										
١٠ـ تعليم الكبار (الفلاحين)										

ضع علامة (✓) على مدى اهمية الفقره أو العامل والمعطاه ادناه للاخذ بعين الاعتبار عند تطوير وتنفيذ المناهج الزراعيه .

العوامل / الفقرات او الطـــرق	مهـم جدا	مهـم	غير مقرر اومحايد	قليـــل الاهمية	غير مهم
١ ــ تقدير اداء الخريج اثناء تأديته للعمل.					
٢ ــ ضمان مشاركة المديرين الاقليميين للبنك الزراعي ووزارة الزراعة من خلال الاجتماعات أو الندوات المختلفة .					
٣ ــ ضمان مشاركة طلبة كلية الزراعة والمعهد الزراعي في تحديد احتياجاتهم ورغباتهم .					
٤ ــ تقدير الجهد التعاوني والمشاركة بين الادارة واعضاء هيئة التدريس في الجامعة والمؤسسات او المنظمات الزراعية المختلفة .					
٥ ــ ضمان مشاركة خريجي الكليات والمعاهد الزراعية السعوديين والذين على رأس العمل في الوقت الحاضر .					
٦ ــ ضمان مشاركة الفنيين الزراعيين غـــير السعوديين والموجودين على رأس العمل في الوقت الحاضر .					
٧ ــ ضمان مشاركة نخبة مختارة من المزارعين من خلال المكاتب الارشادية .					
٨ ــ ضمان مشاركة بعض المستشارين من الدول الاخرى .					
٩ ــ وضع في الاعتبار العادات والتقاليد كمؤثر على تدريس وتعليم وتقبل الافكار او الابتكارات الزراعية الجديدة .					

العوامل / الفقرات او الطـــرق	مهم جداً	مهم	غير مقرر أو محايد	قليل الاهمية	غير مهم
١٠ــ مراعات النظم والدراسات الخاصة بتوصيف وظائف العاملين بالقطاع الزراعي .					
١١ــ التأكد من ان المسئولين بالكليات والمعاهد يبذلون جهدا كبيرا لاعداد الزراعيين اكاديميا .					
١٢ــ التأكد من ان اعضاء هيئة التدريس يبذلون جهدا لتأهيل وتدريب الاخصائي أو الفني الزراعي .					
١٣ــ التأكد من ان عضو هيئة التدريس ملزم نفسه لبذل جهد خاص لحل المشاكل الزراعية المهمة والتي تواجه الاخصائي (الفني) الزراعـــــي .					
١٤ــ التأكد من ان الاداريين في الكليات الزراعية او المعاهد الزراعية راغبين في التأكيد على التطوير المستقبلي والتطبيق للخدمات وللابحاث الزراعية .					
١٥ــ التأكد من ان عضو هيئة التدريس لديه الرغبة في التركيز على الخدمات المحلية والبحث الزراعي العلمي .					
١٦ــ التأكد من ان الاداريين لديهم الرغبة ان يعطوا اولويات لتحديد الموارد التي تخص تجهيز وتهيئة الاخصائي (الفني) الزراعي .					
١٧ــ اقتراحاتك (اذا كان هناك اشياء اخرى) تعتقد وضعها في الاعتبار عند تخطيط وتطبيق المناهج الزراعية : أ ــ ب ــ ج ــ د ــ					

ادناه بعض الاهداف والاغراض التي على ضوءها يتم تخطيط وتطبيق المناهج الزراعية .
ضع علامة (✓) والتي تدل على مدا موافقتك او عدم موافقتك مع الهدف او الغرض الموضح .

الاهداف او الاغراض	اوافق بشدة	موافق	غير مقرر او محايد	غير موافق	غير موافق بشدة
١ ــ تزويد المعلومات التقنية الضرورية لوضع برنامج دراسي جيد للتعليم الزراعي والارشاد					
٢ ــ تحديد اولويات المشاكل الزراعية بكل منطقة.					
٣ ــ انشاء مراكز تربوية اقليمية نموذجية بأحدى الكليات او الجامعة المناسبة .					
٤ ــ تطوير نظام لامداد الباحثين الزراعيين بالمشكلات الزراعية الميدانية (الحقلية).					
٥ ــ التعرف على اساليب التدريس الجديدة التي ثبت نجاحها .					
٦ ــ التعرف على الاساليب الاقليمية الارشادية والتي اثبتت نجاحها .					
٧ ــ محاولة تنمية الشعور بالعمل الجماعي والقيادى بين الخريجين الذين على رأس العمل .					

العبارات المعطاة ادناه متعلقة بالمواضيع الزراعية (المواد) ومحتوياتها الدراسية في مجال تخصصك ما مدى موافقتك مع كل من ا هذه العبارات ؟ اشر الى ذلك بوضع علامة (✓) والدالة على اجابتك .

العبـــارات	اوافق بشدة	موافق	غير مقرر	غير موافق	غير موافق بشدة
١ ــ المقررات الدراسية الزراعية مرتبطة ببعضها بدرجة كبيرة .					
٢ ــ المقررات الزراعية غير كافية لتساعد الطالب في مجال تخصصه .					
٣ ــ العلاقة ضعيفة بين الموضوعات الدراسية والتطبيق الميداني (الحقلي) .					
٤ ــ العلاقة قوية بين الدراسة الاكاديمية والتطبيق الحقلي .					
٥ ــ هناك حاجة لاضافة مادة علمية الى محتويات المقررات .					
٦ ــ محتويات المناهج الدراسية تحتاج الى تعديل لتتلائم مع الظروف الزراعية والانشطة الحقلية .					
٧ ــ الحاجة الى مواد اساسية للمقررات لتساعد الطالب على فهم المواد الزراعية .					
٨ ــ الحاجة الى استخدام الوسائل السمعية والبصرية لمساعدة الطالب على فهم المواضيع الدراسية بسهولة .					
٩ ــ التركيز على الجوانب العملية والحقلية اكثر من النظرية .					
١٠ــ التدريب الصيفي هام ولا بد من التركيز عليه .					

العبارات	اوافق بشدة	موافق	غير مقرر اومحايد	غير موافق	غير موافق بشدة
١١ــ اكتسبت كمية كبيرة من المعلومات والمهارات في مجال تخصصي (يجيب عليها الطلاب فقط).					
١٢ــ في تقديري ليس هناك حاجة للاضافة الى المقررات الدراسية الحالية في مجال تخصصي					
١٣ــ ضرورة التقييم السنوى لتطوير المادة العلمية للمناهج المزرعية .					

شكرا لتعاونك وارجو الله ان يوفق الجميع .

VITA 2

Abdullah Aoudh Al-Zaidi

Candidate for the Degree of

Doctor of Education

Thesis: ADEQUACIES OF CURRICULUM AND TRAINING IN AGRICULTURE PROVIDED AT THREE SAUDI INSTITUTIONS AS ASSESSED BY ADMINISTRATORS, INSTRUCTORS, SENIOR STUDENTS AND REGIONAL DIRECTORS

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